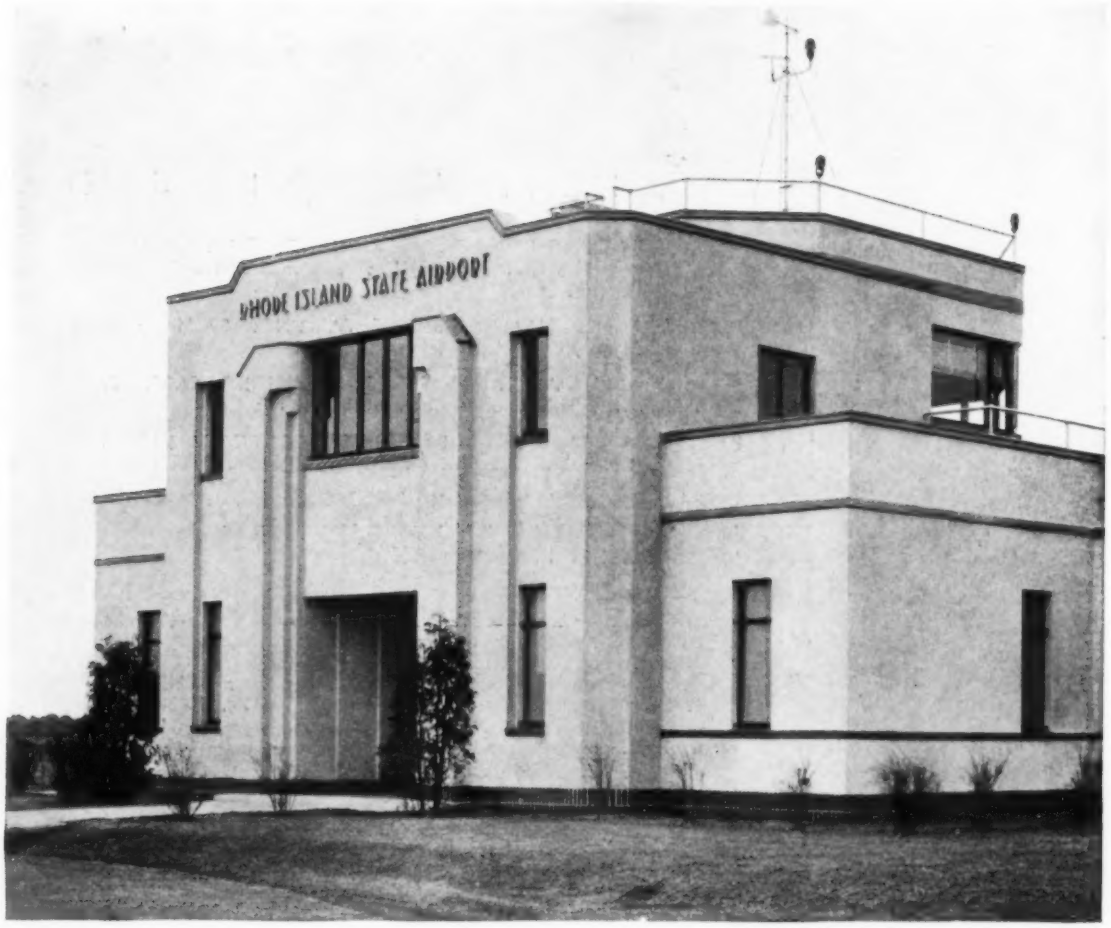
THE ARCHITECTURAL RECORD

VOLUME 77 NUMBER 1 JANUARY, 1935

Published monthly by F. W. DODGE CORPORATION, 115-119 West 40th Street, New York. Truman S. Morgan, President; Sanford D. Stockton, Jr., Secretary; Howard J. Barringer, Treasurer. Yearly subscription: United States and Possessions, $3.00; Canada and Foreign, $5.00; Single Copy, 50c. Member Audit Bureau of Circulations and Associated Business Papers, Incorporated.

Entered as second class matter May 22, 1902, at the Post Office at New York, N. Y., under the Act of March 3, 1879. Printed in U. S. A.

At an Airport — STURDY STUCCO



STANDING unprotected from the full sweep of storm, this airport building must face the worst kind of weather. Its stucco exterior must give protection from driving rain and sleet and snow, from bitter winds and constant freezing and thawing.

Light buff in color, smooth-finished, made with Atlas Waterproofed White portland cement, this sturdy prepared stucco *will* give protection, for years, and will retain its present excellent appearance as well.

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Administration Building, Rhode Island State Airport, Providence, finished with Atlas Waterproofed White stucco (prepared) furnished by California Stucco Products Co., Cambridge, Mass. Harry Carr & Son, Providence, was the plastering contractor, and Jackson, Robertson & Adams, Providence, were the architects.

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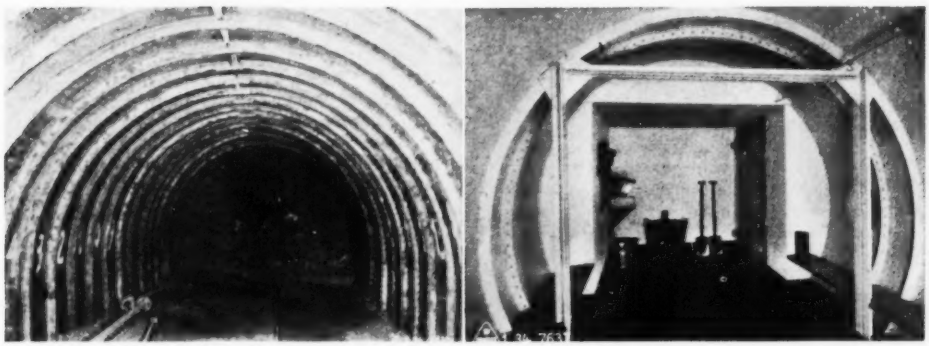


Types of steel plate construction used for gas and bomb shelter.
End walls of reinforced concrete.

BAUTECHNISCHER LUFTSCHUTZ (BUILDING TECHNIQUE AND AIR DEFENSE.) *By Dipl.-Ing. Hans Schoszberger. Bauwelt-Verlag, Berlin SW* 68.

Although written entirely in German, this book gives graphically an extraordinary perspective of the militarization of architecture under Hitler. With a coldly objective and technical precision the author analyzes the structural problems arising from the need of making buildings bombproof and gasproof in case of air attack by enemy nations. Many of the air defense measures which have been suggested are, he points out, a further development or more general application of protective measures against earthquake, flood, fire, tornado, explosion, air pollution. Still others are identical with social and sanitary control measures.

The chief recommendations:

1. Decentralization of cities and industries, redistribution of population densities, penetration of cities with parks. The band or highway city based on traffic arteries is recommended in preference to the concentric city which is an easy target from the air.

2. Integration of farmland and cities for local self-sufficiency in foodstuffs.

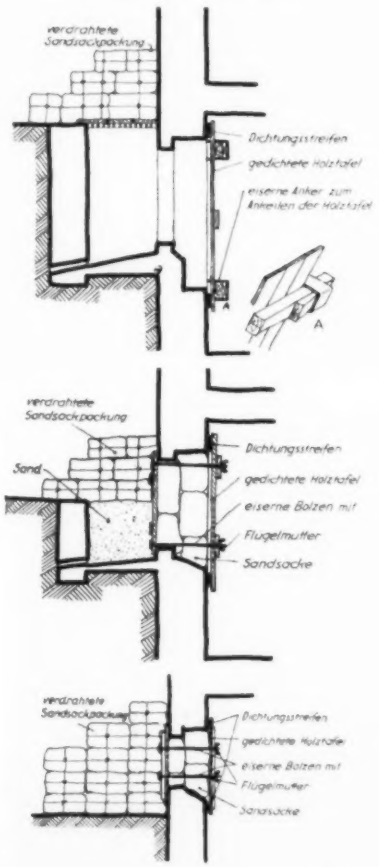
3. Segregation of urban functions with military zoning according to economic importance. Use of wooded areas for camouflage. Low housing or isolated tall structures. Protection of underground utility pipe lines.

4. Utilization of topography and prevailing winds in street design for drawing off poison gas. Streamlining of buildings. Houses on stilts in order to be above heavy gas.

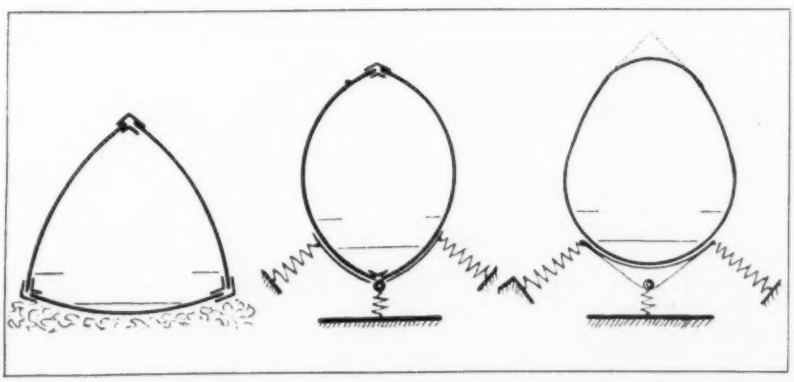
5. Rigid frame construction with lightweight panel walls and roofs as safety valves for gas pressure of internally exploding bombs (but resistant to externally exploding bombs) instead of heavy masonry construction. Protective walls. Protective roofs and steel wire nets for important public and industrial buildings. Fireproof construction.

6. Family or group gas-and-bomb-proof shelters located inside the buildings or on the open land.

Airtight construction of basement windows above and underground.



Free-standing shelters designed by Friedrich.
Construction: shells of steel plates and steel springs.



THE AUTOBIOGRAPHY OF AN IDEA. *By Louis H. Sullivan, with a Foreword by Claude Bragdon. W. W. Norton & Company, Inc., New York.* $2

This new and popular-priced edition of the Sullivan classic is published by arrangement with The American Institute of Architects, custodians of the copyright. The Autobiography of an Idea relates the life history and architectural philosophy of Louis Sullivan, America's first reactionary architect. Sullivan came of New England ancestry and received his architectural training at the Massachusetts Institute of Technology and the Ecole des Beaux Arts.

He received his architectural apprenticeship in Chicago where he worked at intervals in the office of this or that architect and drifted towards the engineering point of view, or state of mind, as he "began to discern that the engineers were the only men who could face a problem squarely; who know a problem when they saw it." At the age of 25 he formed a partnership with Dankmar Adler which continued through the productive years as a practitioner. Sullivan was constantly opposing curent architectural opinion, from a sheer desire to justify procedure. His views were spread as drafting office comment, by articles in the architectural press, Kindergarten Chats and most of all in his work.

As a series of important mercantile structures came into his office, each one was treated experimentally, the architect feeling his way "toward a basic process, a grammar of his own." A major problem was increased sunlight, the maximum of sunlight. This led him to use slender piers, tending toward a masonry and iron construction, the beginning of a vertical system. This method led Sullivan's contemporaries to regard him as an iconoclast, a revolutionary.

As buildings varying in character came into his hand, he extended to them his system of "form and function," and as he did so his conviction increased that "architectural manipulation, as a homely art or a fine art must be rendered completely plastic to the mind of the designer; that materials and forms must yield to the mastery of his imagination and his will; through this alone could modern conditions be met and faithfully expressed."

THE HOUSING PROGRAM OF THE CITY OF VIENNA. *By Charles O. Hardy and Robert R. Kuczynski. The Brookings Institution, Washington, D. C.* 143 *pages. Illustrated.* $2

With the hoped-for revival in residential building the question arises as to how such activity could be revived by private agencies or whether it would be necessary or desirable to turn to governmental activity. In this connection the post-war experiment conducted by the city of Vienna is of interest. The authors give a clear picture of this project of municipal building and municipal administration of residential property.

The pre-war housing situation is presented as a means of comparison, and the emergency measures taken directly after the war to remedy the housing shortage are described. A complete history is given of the major building projects, 1923-33, including location and size of apartment buildings, size and equipment of individual apartments, cottage settlements, and a full chapter each on the financial aspects of the housing program and the administration. The project was carried on under the auspices of the Social Democratic Party during a 14-year period of continuous authority.

STANDARD FILING SYSTEM FOR ARCHITECTURAL PLATES AND ARTICLES. *A.I.A. Document No.* 261. *Developed and Distributed by The American Institute of Architects,* 1741 *New York Avenue, Washington, D. C.* $1

This filing system document should be of much assistance to architects and other members of the building industry in filing magazine plates and articles in a systematic fashion—as they appear. The system is simple and direct with special consideration for three types of offices: (1) the offices that file only a few plates and those under major large groupings; (2) the offices desiring to divide the plates further, and (3) the offices using the entire A.I.A. system for further and most detailed division.

LIGHTING CALCULATIONS. *By H. H. Higbie. John Wiley & Sons, Inc., New York.* $5

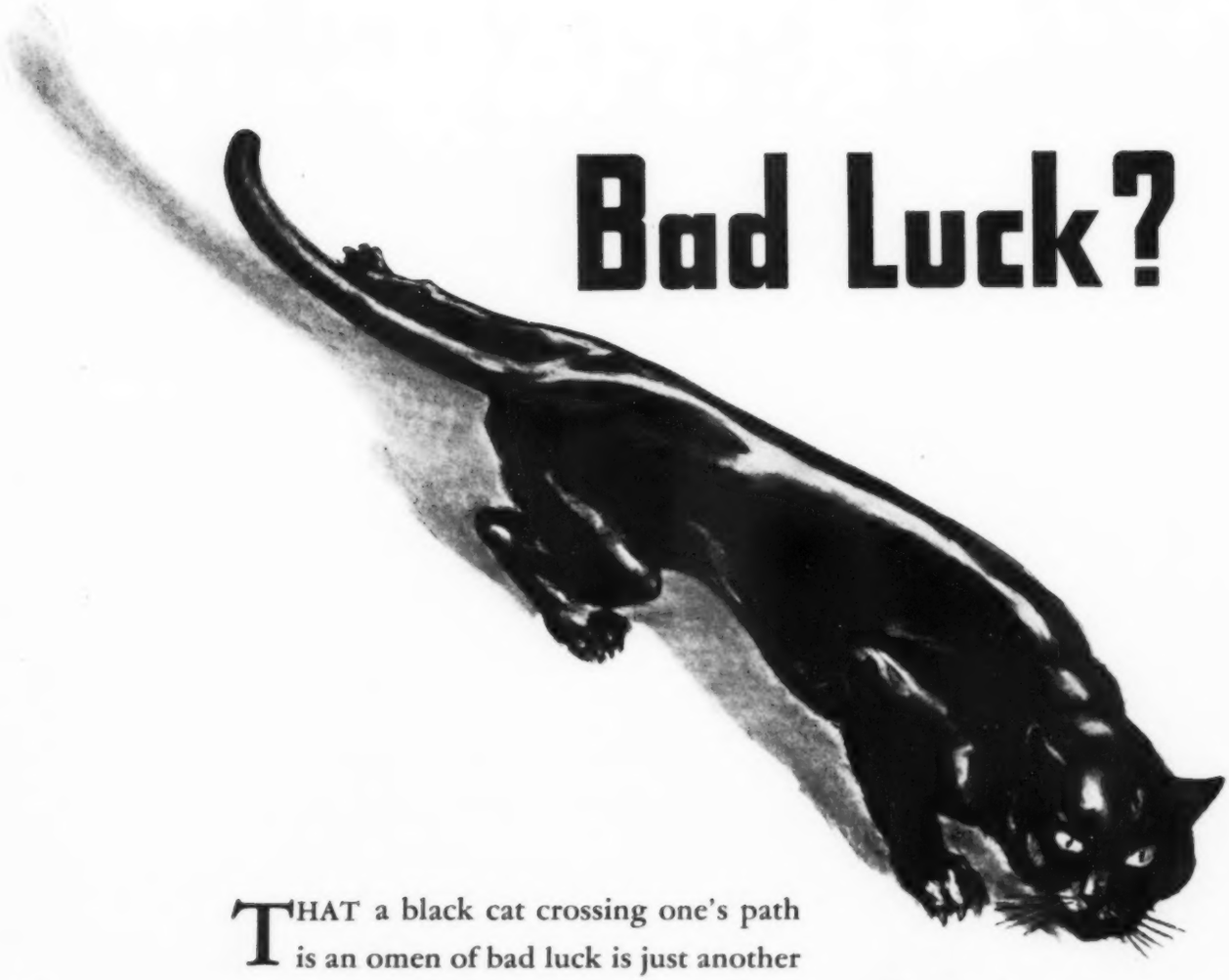
This book by Professor Higbie of The University of Michigan deals with the calculation and refinement of light for diverse illumination uses. It includes calculations and exposition of methods for measuring light flow, reflectivity, brightness, diffusion, etc. These methods are supplemented by the use of protractor, devised by the author, to aid in accurate estimating of illumination without computation from mathematical formulas. While the book is seemingly intended as a student textbook, it is recommended to the architect who is anxious to adjust illumination to a range of visibility and comfort rather than lighting for spectacular effect.

THE ARCHITECTURAL RECORD

1935

SUBSISTENCE FARMSTEADS • MODERNIZATION OF SCHOOLS

Bad Luck?



THAT a black cat crossing one's path is an omen of bad luck is just another of those superstitions inherited from an earlier day . . . Many an old, mistaken notion fades in the light of improved knowledge. For example, not long ago it was widely believed that sheets able to defy rust could be obtained only by paying a high price . . . Then along came the famous tests of the American Society for Testing Materials, showing clearly that of all commercial steels and irons, copper-bearing steel ranked first in rust-resistance, by a wide margin . . . Beth-Cu-Loy Sheets are made of copper-bearing steel. They have from two to two and one-half times the rust-resistance of ordinary steel sheets, yet cost only a trifle more. Wherever sheet metal is exposed to atmospheric corrosion, Beth-Cu-Loy is the sensible, economical sheet to use.

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MEASURED DETAILS FROM SAN GIMIGNANO, ITALY

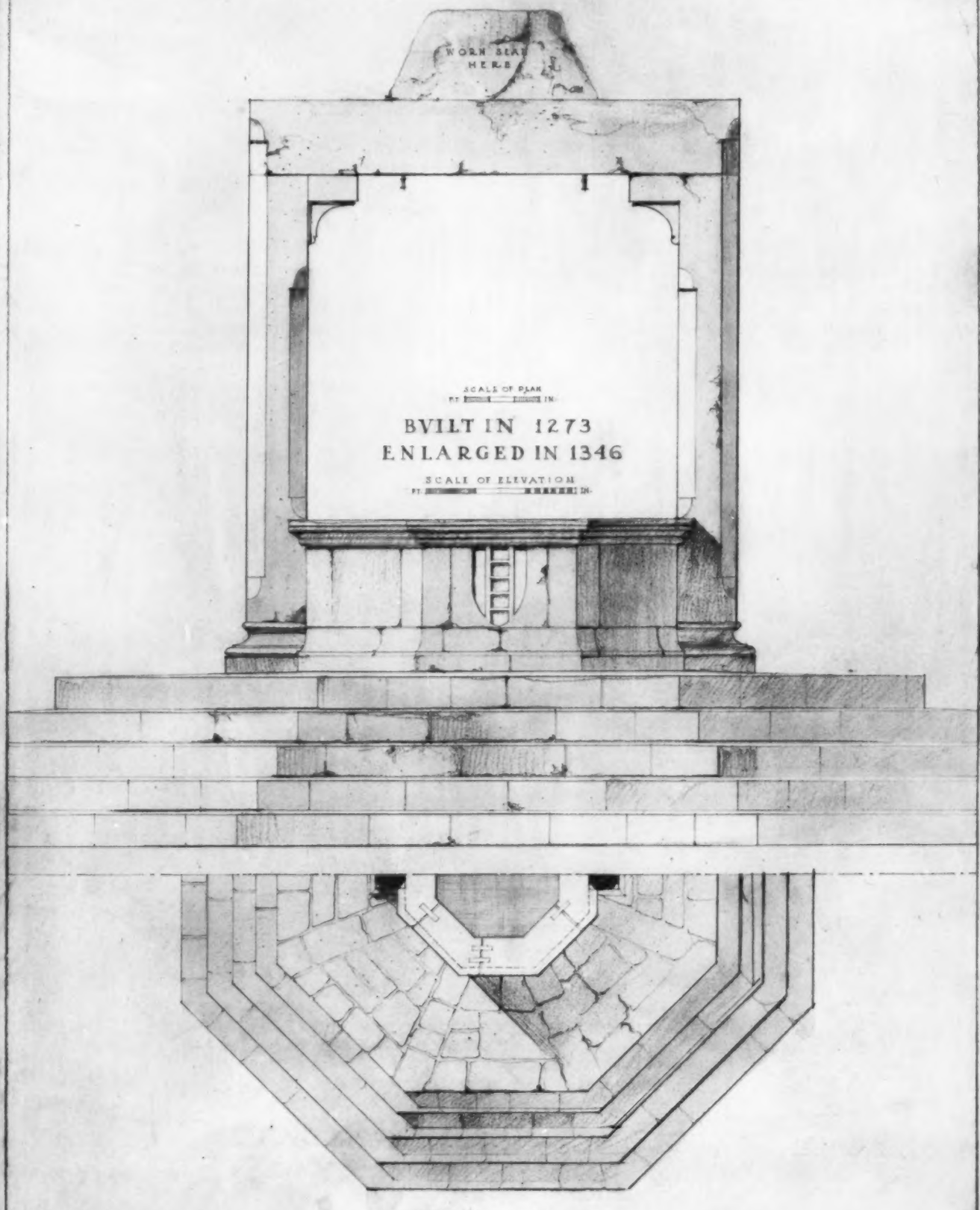
By IVES VAN DER GRACHT
and ROBERT W. McLAUGHLIN, JR.

THE PIAZZA DELLA CISTERNA: From the principal approach to the town, passing the façade of San Francesco, the narrow street mounts sharply through two ancient VII or VIII century gateways toward the Piazza della Cisterna, or "of the Taverns." Here, in front of the Palazzo Cugnanesi, were held in 1227 some memorable wedding feasts—gaudia nuptiarum—with tournaments, games, dances and every sort of convivial pastime in which all the inhabitants of the Territory took part, and which lasted through several days and nights. The large well in the center was constructed in 1273; the shield which decorates it is that of Guccio de' Malevolti, Podestá in 1346, at which time it was probably enlarged and embellished with the sculptures on top of the lintel. These, however, are too weathered to permit of much interpretation. On its broad base of steps, the well harmonizes in its simplicity with the severity of the Piazza, surrounded by a number of fairly well preserved XV and XVI century palaces.

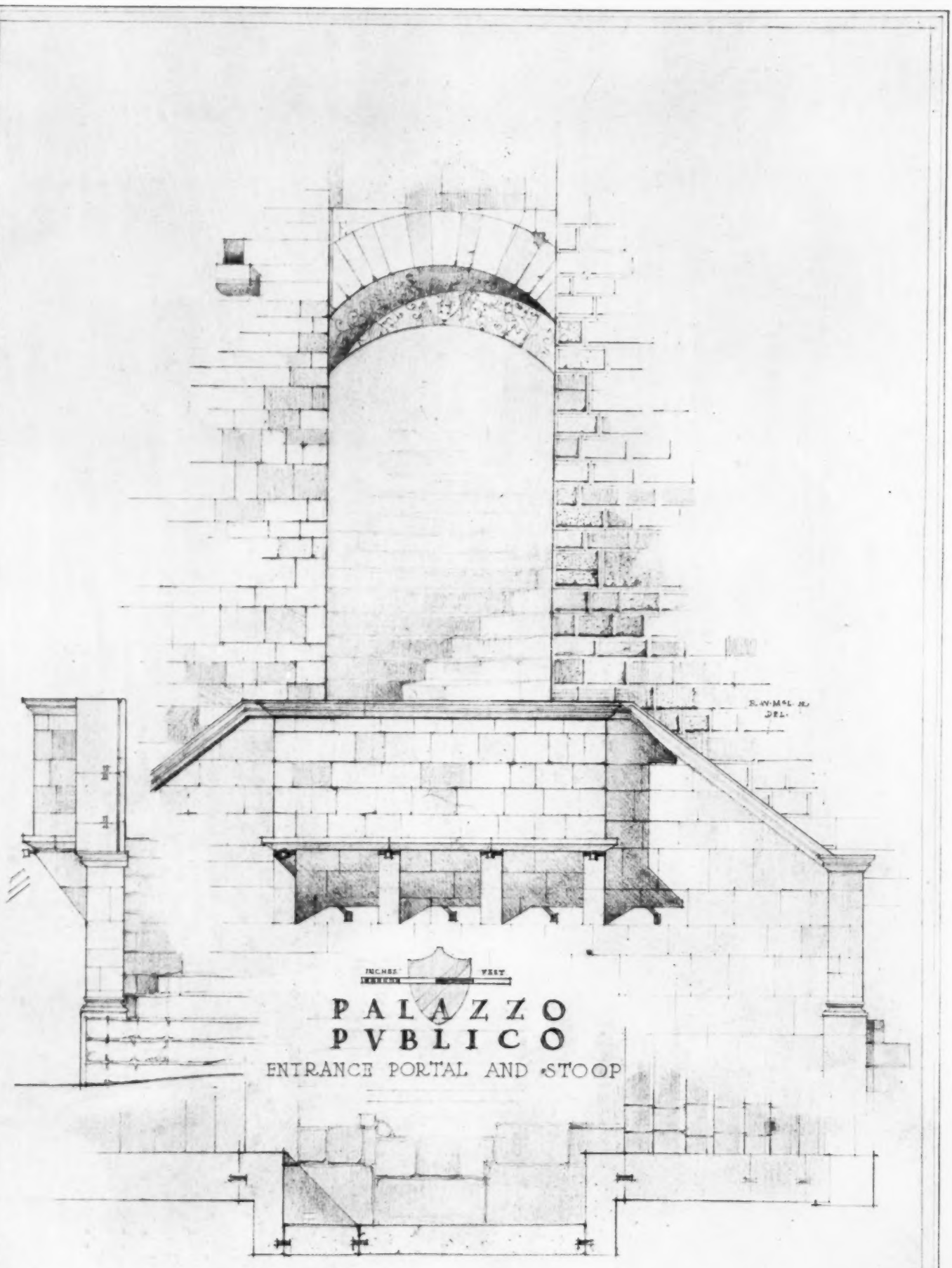
Photograph by Alinari

WELL IN THE PIAZZA DELLA CISTERNA

WELL IN THE PIAZZA DELLA CISTERNA



MEASURED DETAILS FROM SAN GIMIGNANO, ITALY



BY IVES VAN DER GRACHT AND ROBERT W. McLAUGHLIN, JR.

Photograph by Alinari

BALCONY OF THE PALAZZO PUBLICO IN SAN GIMIGNANO

VOL. 77 NUMBER 1

1935

JANUARY

THE

ARCHITECTURAL RECORD

An important phase of the Federal building program is the establishment of subsistence homesteads. Plans for 58 projects have been approved, and the majority of these are already well under way. Proposed as unemployment relief measures, the homesteads depend for their success on a satisfactory integration of industry and agriculture. The 1934 Report (just released) of the Secretary of Agriculture analyzes this problem, and since the section relating to subsistence farming is a pertinent appraisal of the current building program, it is reprinted herewith.

UNEMPLOYMENT AND SUBSISTENCE FARMING

By HENRY A. WALLACE, Secretary of Agriculture

In hard times the unemployed look naturally to the land. They cannot be refused access to it; and yet to admit them into agriculture unconditionally would involve removing certain restraints upon agricultural production. Here is a dilemma. On the one hand, the progress of agriculture absolutely requires a limitation of farm production and therefore of farm employment. On the other hand, national expediency forbids closing the rural country to the urban unemployed.

The Agricultural Adjustment Act creates very little unemployment. Farm owners, and tenants with a reasonably secure tenure, do not become unemployed through crop reductions. Hired labor and certain types of tenants, notably the share-croppers of the South, may occasionally suffer. But the Agricultural Adjustment Administration endeavors to protect these groups. In cotton and tobacco contracts it stipulates that landlords as far as possible shall maintain their normal force of tenants or hired hands. By comparison with other causes of rural unemployment, such as the interruption of the flow of rural population to the towns and the flight of city people to the country, the influence of crop adjustments is negligible. Between 1929 and 1933 nearly 2,000,000 people left the towns.

Six Southern States last spring reported having on their relief rolls from 15,000 to 40,000 farm families per State. For the most part, however, these farm families had been thrown into distress by the depression. Undoubtedly the number would have been greater had the adjustment program not increased the income from cotton in 1933. Moreover, the great majority, perhaps 75 per cent, were still on farms in one capacity or another. They were not entirely without means of self-support. Considering the country as a whole, the crop adjustments relieve far more unemployment than they create. Scores of towns and cities throughout

HOMESTEAD AT CROSSVILLE, TENNESSEE

the country, which 18 months ago were in the depths of depression, have picked up under the influence of restored farm buying.

It is nevertheless true that farm recovery, with its need for restraints on farm production, goes against the natural desires of the urban unemployed to seek refuge on the land. In this matter the agricultural interest—the necessity for farmers to curb their competition—must to some extent give way. There are many millions of unemployed in the United States. Their maintenance is a public charge, which cannot be repudiated. About one-third of the families on relief rolls are already in the country or in country towns. Moving an increased proportion from the congested centers of population doubtless would reduce in many cases the expense of maintaining them. Living costs are much lower in the rural communities, and the country affords a chance for the unemployed to produce some of their own food. To some extent the shift is necessary.

A COUNTERWEIGHT TO FARM RECOVERY

Such a shift tends to deprive commercial farmers of a part of their urban market. Moreover, it tends to increase farm competition. So-called "subsistence farming" cannot be entirely noncommercial. Inevitably it produces something for sale. This is a counterweight to farm recovery which farmers will cheerfully accept in an emergency. But they have a right to urge that its effects be tempered as much as possible. We ought not to adopt a defeatist attitude, and to say the only thing to do with urban unemployment is to push it into the country. That simply means dividing a reduced agricultural income among an increased number of persons. It is far better to push industrial recovery. Meantime, we must handle the situation with the least injury to established agriculture.

Subsistence farming has been suggested as a solution —i. e., farming not for the market but for the home table. This is a difficult aim. Farm families require a cash income to supplement what they can grow for their own use. Unless they can earn money off the farm, they must get it from the farm. Otherwise the subsistence farm does not furnish subsistence.

Established farmers have a right to insist that nonfarm sources of cash income be made available when the country establishes unemployed people on the land. Placing thousands of families on the land, with no other source of income, drives them into commercial farming. They may not produce any great quantity of goods for sale, but what they do produce will be sold at distress prices. Such fostered marginal production can do great harm. So far the movement to put city people on the land has run ahead of the provision for supplementary employment. People have been decentralized faster than industry, and established farming suffers. Part-time nonfarm work must go along with so-called "subsistence farming."

The task is full of difficulties, which must nevertheless be faced. Centralized industry grew up in its present locations in the pursuit of profit. To decentralize it, not primarily for the sake of profit but in order to furnish employment in new locations, should not be attempted hastily. In thus trying to improve the conditions of employment, the profit motive cannot safely be ignored. To do so may do more harm than good. Redistributing labor and industry over the countryside is a delicate operation. Yet not to try it means destroying the essence of the subsistence-farming movement, and turning it into an unregulated and uneconomic eruption of city people into commercial agriculture. Countryward movements of the unemployed should be accompanied by a sufficient expansion of local non-agricultural employment to provide a local interchange of factory and other goods for farm products. To expand farm production for local consumption, without at the same time expanding industrial production or local consumption, would simply displace farm products from other regions. It would aggravate the unbalanced condition of agriculture, and would not work any net improvement.

NATURE OF THE PROBLEM RECOGNIZED

Relief agencies, both Federal and State, have this well in mind. In one State 49 per cent of the unemployed-relief load is rural and 51 per cent urban. The State relief agency will have urban-relief groups produce industrial goods, while rural-relief families produce food. Both types of production will be held within relief channels and a system of exchange will give each person credit for his own production. This method should have wide application, since it furnishes unemployment relief at relatively low cost without seriously complicating farm readjustment. Another State has plans under consideration for establishing manufacturing or processing plants in country communities to furnish part-time employment. These establishments, it is believed, will provide a source of cash income both to urban-relief families newly moved into the areas served and to rural-relief families already there. In yet another State the relief authorities contemplate relocating good families whose adult members were farm-reared. Many such people wish to return to their old neighborhoods but not necessarily to resume farming.

Fundamentally, the question is whether poor folk in town and country should be supported in demoralizing idleness or helped to become self-supporting. Either method involves expense to the rest of the community. Which is the less costly, everything considered? Short-sighted views may prefer straight charity to obviate increasing the intensity of industrial or agricultural competition. But that involves attaching value to work for its own sake, without regard to the destination of the product. It means that the employed elect to work harder, so that the unemployed need not work at all. The other method, whereby urban and rural relief families employ one another through an exchange of services cuts down the relief bill, may have little harmful effect on commercial industry and agriculture and prevents social disaffection. There is nothing wrong with the idea. The danger is that we may not apply it thoroughly; that in practice we may not couple subsistence farming with adequate part-time employment.

ESTABLISHMENT OF SUBSISTENCE HOMESTEADS

The Division of Subsistence Homesteads of the Department of the Interior is promoting the true objective. Section 208 of the National Industrial Recovery Act appropriated $25,000,000 to be used to "aid in the redistribution of the overbalance of population in industrial centers" through assisting in the establishment of subsistence homesteads. Before the close of the fiscal year the Department of the Interior had approved plans for 58 projects, the majority of which are now under way. In each project there are from 25 to 300 homesteads.

Specifically the aim is to help poor families to get a more secure and more satisfactory living through a part-time combination of industrial employment and subsistence agriculture. The homesteads are usually 1 to 5 acres. They are capable of producing a large portion of a family's yearly food supply. The cultivation of vegetables, fruits, truck crops, and the care of poultry, and in many cases a cow, comprise the agricultural operations on most subsistence homesteads.

Because the subsistence-homestead plan is a method of aiding in the solution of various social problems, rather than an object in itself, the projects vary considerably. First, there are garden homesteads for industrial workers. Projects of this type are located near industrial towns and cities, where the workers, while living in semi-rural communities are yet able to commute easily to and from their urban jobs. Such projects may tend somewhat to decentralize population and industry. In large urban areas, such as Los Angeles, Chicago, Youngstown, and Birmingham, the decentralizing trend develops within the urban districts through the establishment of suburban areas of subsistence-homestead communities. Small industrial towns, such as Decatur, Ind., Austin, Minn., Taylors, S. C., or Longview, Wash., offer good opportunities under conditions favorable to industrial decentralization.

PROJECTS FOR STRANDED INDUSTRIAL GROUPS

Then there are subsistence-homestead projects for stranded industrial groups. Great numbers of people formerly employed in the exploitation of natural resources have permanently lost their jobs through the exhaustion of the resources, as, for example, in certain abandoned coal fields of West Virginia. With the home production of food and shelter on the subsistence homestead as a basis, and with recourse to part-time employment in forests, newly established industries, or handicrafts, many previously destitute families are becoming self-supporting.

Rural rehabilitation sometimes calls for applying the subsistence-homestead plan to agricultural groups. The submarginal areas of the old Cotton Belt, of the cut-over lands of the Lake States, and of certain dry-farming regions of the northwestern Great Plains have been chosen as demonstration sites. Thus farm families have a chance to move from eroded, worn-out, or drought-stricken sections to subsistence-homestead communities located on good land. Intensive farming, primarily for subsistence, replaces extensive and wasteful cash-crop production. The crops produced for the market are usually not the staples in which surpluses exist. Moreover, the establishment of these new farm homes is offset by the retirement from cultivation of proportional amounts of submarginal land.

HOMESTEAD PROJECT AT REEDSVILLE, WEST VIRGINIA

HOUSING STANDARDS FOR SUBSISTENCE HOMESTEADS

By BRUCE L. MELVIN, Division of Subsistence Homesteads, Department of the Interior

The Division of Subsistence Homesteads of the Federal Government is now building low-cost houses on one to five-acre tracts of land in an effort to provide better living than has heretofore been available for fifty per cent or more of our working population.

Three purposes are encompassed in this undertaking:

(1) making possible home ownership for a class who under our economic organization has been unable to attain it;

(2) providing greater security with an improved standard of living for this class in the midst of economic fluctuations; and

(3) assisting this low-income group to better living. The interest of the readers of THE ARCHITECTURAL RECORD is primarily in the third purpose, and particularly in better living as exemplified in terms of better housing.

REQUISITE CONSIDERATIONS

Housing standards may be either relative or absolute. As an amateur, I think of housing standards as consisting of protection against the elements, convenience whereby labor will be saved, provision for sanitation and healthful living, and the form and setting such that the aesthetic quality in both may be clearly perceptible. All these are relative, dependent upon time and place; and, in the development of low-cost housing by the Government, all are subject to limiting factors.

The strongest limiting factor is that the cost of land, house, other buildings and equipment must be sufficiently low so that families of low income can pay for them over a period of thirty years. Since even in good times the average annual earnings of the industrial workers in America were less than $1,000 a year, one realizes that the homestead cannot cost this worker more than $2,000 to $3,000. At the same time the house must be so constructed that it will last through the period of amortization with a minimum required for repairs.

These considerations are ever present when thinking of what to provide. Can a minimum standard house with modern conveniences and utilities be furnished at a cost that can be repaid?

I have before me figures on 631 part-time farmers (owners) in Hennefin County, Minnesota. Of these, 287 have water in the house and 183 have inside toilets. The unskilled workers of this group have an average income of $363; the skilled workers, $480; and the white collar workers, $710. If the subsistence homestead houses were being built in this area for these classes of workers, it does not seem possible that all conveniences could be provided. My position, therefore, would be to build houses that provide a better standard of living than that to which the families are accustomed. If people are to be taken from slums where four or five families have used one toilet, either outside or inside, my position is that a sanitary outside toilet provided at a cost within the means of the homesteader is preferable to complete inside equipment but with the people so burdened by debt that they could not meet their obligations. The best house for which the family can pay is the type that should be built.

THE HOUSE IN RELATION TO THE SITE

In perhaps no other house building program is the location of the house in its relation to its physical environment of greater importance than in establishing homestead communities. The houses should be part of the landscape and at the same time have a harmonious relation to each other. The making of an harmonious whole—whether twenty-five houses or three hundred—is the work of an artist.

Houses also should be so placed in relation to an arterial highway that transportation is easy but the children are protected from speeding automobiles. At the same time auxiliary highways should give the houses easy access to each other. Likewise, the houses should be easily accessible to the neighborhood store, the school and community center, if it is separated from the school.

The architecture, plan, elevation and general appearance should be part of a planned scheme and be based upon the indigenous architecture of the region, unless it is definitely desirable to introduce a completely new plan of construction involving the most modern designs and materials.

STANDARDS FOR THE HOUSE

General standards respecting the houses can here be postulated, but their application rests with the planner of a particular house or group of houses in a project. Houses should be adapted to their special use; they are neither city nor farm homes; they lie midway between the two. These houses are to be used on the land, but by persons working in the town or city. The family will enter the houses with dirt and mud on their feet. There should therefore be an entrance where dirty shoes and clothes may be removed.

The houses are for families who will form family units. Therefore, a room (call it a living room if you care) where the family can associate informally and joyously should be provided.

Storage is essential for fruits and vegetables, either in the house or outside. If it is cheaper, as is true in some parts of the country, for the storage unit to be placed outside the house, this should be done.

The plan and material of the house should be such that the placement of furniture and other equipment will be economical in space and make for low-cost heat-

ing, especially in a northern climate. In addition, the rooms should be related to each other, and the arrangement of the kitchen should be such that a minimum number of steps are necessary in doing household work.

It is most important to consider the place and work of the woman in this home, because much of the success of the family in the homestead will depend on the contentment of the wife. Though this is a way of life, it is one that may be exceedingly hard for the wife, part of whose duty will be to oversee the production and preserving of food.

The final standard, as I see it, is that the house, yard and other buildings should be such that the family can have pride in them and joy in working for their improvement. They will be making a family home.

CONCLUSION

The work the Federal Government is doing is experimental, and because of the fact its standards will gradually emerge. These standards will grow out of the opinion and experience of the housing experts; they will be the final judges. The position taken in this paper is personal; it is inconclusive, but predicated on the belief that standards must constantly change and that accumulating information will correct errors in the position here taken.

Facts About the Subsistence Homesteads Program From Bulletin 1 of the Division of Subsistence Homesteads

The Division of Subsistence Homesteads is a unit of the United States Department of the Interior, subject to such policies and regulations as the Secretary of the Interior may prescribe. The Division was organized pursuant to an executive order dated July 21, 1933, and a subsequent order issued by the Secretary of the Interior on December 2, 1933, creating the Federal Subsistence Homesteads Corporation through which the work of the Division is executed.

The $25,000,000 appropriated for the purpose of carrying out the program of the Division is a revolving fund. Homesteaders' payments, applied against the purchase price of their home, are returned to the fund for use in new projects.

The part of the Federal Government is that of experimenter and demonstrator. Projects are selected with a view to testing varying sets of conditions found in the several parts of the United States and among different types of people.

The Division was originated for one set purpose and can not:

1. Lend money directly to individuals for the purpose of buying farms, livestock, or building homes on individual subsistence homesteads outside of the Division's projects.
2. Make loans to corporations whether limited dividend, nonprofit, or commercial, for the establishment of a subsistence homestead project.
3. Grant funds to aid in the initiation of industrial or commercial enterprises, whether in connection with projects established or otherwise.
4. Purchase land except for specific projects approved and undertaken by the Division.
5. Use any part of the $25,000,000 revolving fund to carry on industry or business by the establishment of Federal enterprises.

POLICIES

To demonstrate what may be done to help distressed citizens win a degree of economic security and a more adequate standard of living, the following policies have been adopted:

1. To conduct this experiment in such a manner that it will demonstrate to private agencies, States or municipalities the desirability of the movement and encourage them to emulate the Federal Government.
2. To attempt to show a remedy for the existing social and economic weakness by selecting families who will benefit by a transfer to a subsistence homestead.
3. To select people capable of buying their own homes and who have had sufficient experience to fit them for farming or gardening work. They must also have the character and will to succeed. Advisory management flexible enough to suit the various groups dealt with and widely administered so as to cooperate with local government will be furnished them.
4. To protect the character of the community by requiring suitable zoning or other regulations.
5. To provide adequate educational facilities for the children of the homesteaders at all projects, either by locating near existing schools or the establishment of the proper facilities.
6. To design and construct houses suitable in appearance and convenience within a cost range between $1,000 and $2,500, so constructed that a minimum of repairs will be required over a twenty-year period.
7. To provide homes sufficiently large to care for the average family, and so planned that they may be expanded with a minimum of changes to the original unit.

PLANNING AND ADMINISTRATION

1. *Location and Type of Projects.*

A "subsistence homestead" denotes a house and outbuildings located upon a plot of land on which can be grown a large portion of the foodstuffs required by the homestead family. It signifies production for home consumption and not for commercial sale. In that it provides for subsistence alone, it carries with it the corollary that cash income must be drawn from some outside source. The central motive of the subsistence homestead program, therefore, is to demon-

strate the economic value of a livelihood which combines part-time wage work and part-time gardening or farming.

Projects are located with reference to the principal "problem areas" of the United States. They are established within these areas on the basis of local need, suitability for demonstration purposes, and the presence of various factors essential to the project's success. In conformity with this selective policy, funds are not allotted on a state or other territorial basis. Each project is planned to test out certain special features.

Four major groups of projects are being established as follows:

a. Stranded groups.
b. Special Problem groups.
c. Rural (Open Country Colonization) groups.
d. Industrial (Garden Homes) groups.

2. *Planning Projects.*

Projects are planned and organized in cooperation with the State Agricultural Colleges, Experiment Stations and Extension Services; relief, welfare and other civic agencies; and with State and local agencies whose fields are involved and whose services contribute to the success of the project.

3. *Agricultural Aspects.*

Selection of the site and its soil is subject to approval by agricultural experts. The size of the homestead, its layout, the selection of crops and livestock enterprises, and the agricultural program in general are planned in cooperation with agricultural authorities and with home economics specialists.

Experience shows that a properly guided subsistence homestead unit need not operate adversely to commercial agricultural producers.

4. *Engineering and Architecture.*

The homestead developments are laid out and constructed in accordance with approved architectural and engineering practice. While the structures and other facilities must necessarily be moderate in cost, they conform to standards of convenience, durability, sanitation and attractiveness with sufficient variation to avoid monotony. Availability of highways or other transportation facilities, and proper facilities for health, sanitation, electric light and other essential utility services, are required.

The size of individual homesteads varies from a half acre in the case of garden type projects, to 20 to 30 acres in rural projects. Houses vary in size and cost according to the group to be accommodated. In size, the houses range from 3 to 6 rooms. Three-room houses, however, are not constructed if they cannot be expanded with a minimum of alteration. The cost of houses will be from $2,000 to $3,000.

5. *Management.*

The Federal Subsistence Homesteads Corporation acts as the operating agency of the Division. Supervising each project is a manager who has charge of the construction and administration. It is hoped to secure the cooperation of an interested group of local citizens who will act in an advisory capacity for each project.

Through the Corporation, the Division purchases and improves the land, constructs the dwellings and outbuildings, and sells the completed homesteads to individual families. In addition to the cost of labor,

SUBSISTENCE HOME AT REEDSVILLE, W. VA.

land and materials, the purchase price includes a management cost prorated among the homesteaders of each project.

Amortization schedules are adjusted to the character of the project, prospective earning power of the homesteaders, quality and character of construction, etc. Payments may be made monthly, quarterly, or semi-annually; in most cases a plan of monthly payments extending over twenty years is followed. Deferment of initial payments may be permitted where necessary, but such deferment will not exceed two years. The source of the rquired cash income will ordinarily be employment in nearby industries, sale of products of home industries, in some cases work in nearby forests, or other sources of wage employment off the homestead.

6. *Selection of Families.*

Selection of families for the homesteads is made under the direction of project managers subject to final approval by the Division. Careful inquiry is made into character and ability, past record, interest and fitness for agricultural pursuits, present employment status and prospects for wage-employment off the homestead. Sources of cash income are essential in order that all payments will be met regularly.

7. *Educational and Advisory Facilities.*

The availability of competent local technical advice and guidance, particularly in the fields of agriculture and home economics, is essential for most of the families, at least during the initial transition period. This usually is arranged for through cooperation with existing educational and service agencies such as the State Agricultural Colleges and Experiment Stations and the Agricultural Extension Service.

RURAL-INDUSTRIAL COMMUNITY PROJECT No. 1

WOODLAKE, TEXAS

Woodlake, the first rural-industrial community established under the Federal Emergency Relief Administration, is located in Trinity County, Texas, 100 miles north of Houston in the pine woods section of East Texas. Approximately 90 families live there now. The community has 100 houses, and the remaining 10 will be filled shortly. Ground was broken for the project in January last year. The construction and development was done by heads of the families now living there. The men went out from Houston and lived in improvised barracks, until they built the houses, then began moving their families in during the summer. All of the families were selected from the Houston relief rolls. The community is a project of the Texas Relief Commission and is operated by the Texas Rural Communities, Inc., an agency of the State relief commission.

Woodlake is considered by the FERA and the Texas Relief Commission as a demonstration that needy unemployed workers and their families can become self-supporting in organized rural communities with a moderate amount of supervision, and with a reasonable investment of relief funds.

The houses with three acres of land, barn, etc., range from three to five rooms and were erected at an average cost of $1,490, of which $670 was relief labor, leaving a net cost of $820. They have modern plumbing and brick or stone fireplaces. Each house is on a three-acre tract devoted to a garden, an orchard and vineyard, and a chicken house with 200 chickens. A combination barn, garage, and laundry is also on the plot.

The houses are of native East Texas architecture, designed by David R. Williams, now architect of the FERA Rural Rehabilitation Division. A key plan was used, and rooms were shifted to give variety in design, resulting in prefabrication of all material in units at a mill set up in the community.

A homestead is occupied under a three-year lease at $180 rent a year which is being paid in farm and poultry surpluses delivered to the Texas Rural Communities. On the outskirts of the community are two large community tracts of approximately 600 acres each.

In the center of the community is a park of 255 acres shaded by oaks and elms and containing two lakes. In the park are a school, a community house, a bath house, and a trading post. The community house is used as a church. It is built of native materials, logs for the walls and stone for the large fireplace. The bathing pavilion is of native stone.

RURAL-INDUSTRIAL COMMUNITY PROJECT No. 2

OSCEOLA, ARKANSAS

The second rural industrial community established under the Federal Emergency Relief Administration is located near Osceola, Mississippi County, Arkansas. The initial 100 houses have been completed. The families will come from various counties in the State where they are now receiving relief. Ultimately, according to present plans, the community will include approximately 700 families.

The community is a project of the Arkansas Emergency Relief Administration and is operated under the Arkansas Rural Rehabilitation Corporation, an agency of the Arkansas relief administration. It also is a part of the FERA Rural Rehabilitation program directed by Col. Lawrence Westbrook, Assistant FERA Administrator.

The project is financed by Federal funds granted by the FERA to the State.

The houses follow the native architecture of the region in several different one-story types. Three-, four-, and five-room houses of each type have been built. The largest houses, equipped with plumbing, a barn, and a well, have been completed at a cost of approximately $1,300. The smaller houses, including the same items, cost around $900.

Each house is situated on a tract of from 20 to 40 acres. Every four houses are on adjacent corners of the tract, grouping them conveniently close together, simplifying the layout for roads and light and power lines, and providing neighborliness.

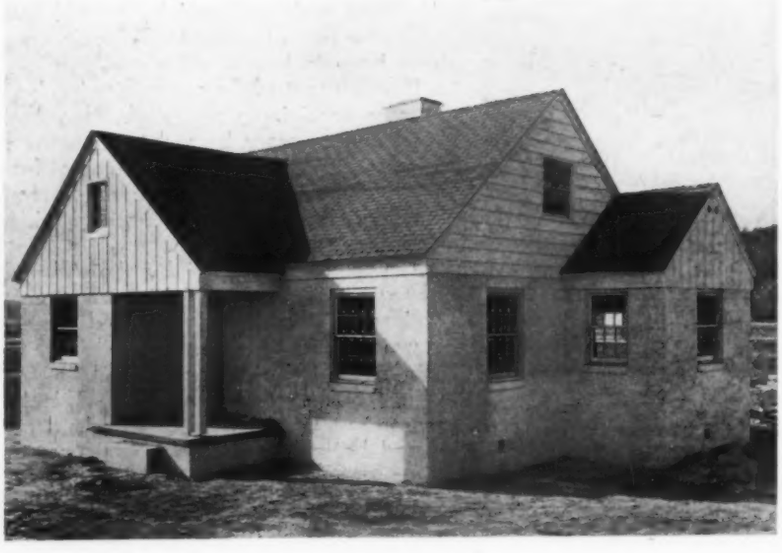
A trading post and a canning center, a park, a recreation hall, and several other community features are included in the plan, but are not yet built.

The community, in effect, has been hewn out of a wilderness. Roads and bridges have been constructed, and land cleared. The lumber was cut from trees felled on the tract and produced by several sawmills at a cost of about half what it would have been to buy it.

Development of the community has been by men receiving work relief. They have lived in temporary barracks and eaten in a mess hall. These workers came from nearby communities. Lumbering, road-building, and construction have provided work for about 1,500 men.

The land was bought by the Arkansas Emergency Relief Administration from a drainage district by paying the delinquent taxes of $2.50 an acre. The soil is of the Mississippi Delta type, reputed to rank with the richest in the world. This last season small portions of cleared land produced better than 60 bushels of corn to the acre and as high as two bales of cotton to the acre.

RURAL-INDUSTRIAL COMMUNITY PROJECT No. 3



RED HOUSE, WEST VIRGINIA

The Putnam County Farms project, near Red House, West Virginia, is the third rural-industrial community started with funds of the Federal Emergency Relief Administration. It is 27 miles west of Charleston on the Kanawha River, the New York Central Railroad, and State Highway Number 25.

The project is designed to provide eventual self-support for 150 families now receiving emergency relief. It was planned and is being constructed by the Works Division of the West Virginia Emergency Relief Administration and is financed by Federal emergency relief funds.

The tract for the community comprises 2,200 acres costing approximately $29 an acre. The site of the dwellings and the farm land, comprising about 800 acres, flat, lies in a half-moon-shaped valley. Each house is on a plot of from three-quarters of an acre to an acre. The plot also provides for a barn, a chicken pen, a garden, and a lawn with shrubbery. No work animals, cows, or pigs will be kept on the individual plots.

The houses are built chiefly of cinder blocks. Wood is used in the interior, but little on the exterior. The cinder blocks are made for 10 cents apiece in a temporary plant on the place. Lumber is bought at an average of $26.75 a thousand and is fabricated on a mass production system in a shop on the place. It goes to the house locations ready for placing and fastening.

The dwellings range from three to five rooms and are designed in 12 different basic types. By reversing the plans a total of 24 design variations is obtained, with further differences accomplished with colors and porches.

The cost of the homes will range from $1,800 to $2,500, averaging $2,150. This includes the house, barn, chicken pen, the plot of land, initial fertilization, and landscaping. The cost of roads, water systems, sewers, the general farm and the tract of non-farming land belonging to the community will be either pro-rated or placed on a self-liquidating basis.

A three-room house includes front and back porches, a living room, a combination kitchen and dining room, a pantry, a bedroom, a bathroom, a large unfinished attic-room, and a cellar. Larger houses contain more bedrooms.

The living room contains the fireplace and the stairs to the attic, with closet space underneath. The roof is insulated, and the attic is divided for storage and sleeping quarters for children. The cellar is small and provides for fruit and vegetable storage and access to the bathroom and kitchen plumbing. It can be enlarged easily by the occupant, if desired.

Photographs by Bollinger

ILLUSTRATED NEWS

TREASURY DEPARTMENT APPOINTS DESIGN COMMITTEE

To secure the best possible designs for buildings authorized by the recent public building program, the Secretary of the Treasury has created an Advisory Committee on Architectural Design to collaborate with the Public Works Branch of the Procurement Division. The Committee is composed of the following members:

Aymar Embury, II, of New York City, N. Y.
Charles Z. Klauder, of Philadelphia, Pa.
Philip B. Maher, of Chicago, Ill.

This Committee will review the work of the Supervising Architect, that of consulting architects who have been brought to Washington and also the work of private architects having existing contracts for public buildings.

HOUSING ADVISORY COUNCIL APPOINTED

Administrator James A. Moffett of the Federal Housing Administration announces the appointment of a Housing Advisory Council. This council is composed of representative men who are authorities in the seven broad functions of the FHA: architecture, construction, materials, labor, city planning, housing, and finance

Membership in the council consists of twenty-five men. These men are expected to hold full committee meetings on the average of two days a month, with more frequent meetings of the various subcommittees.

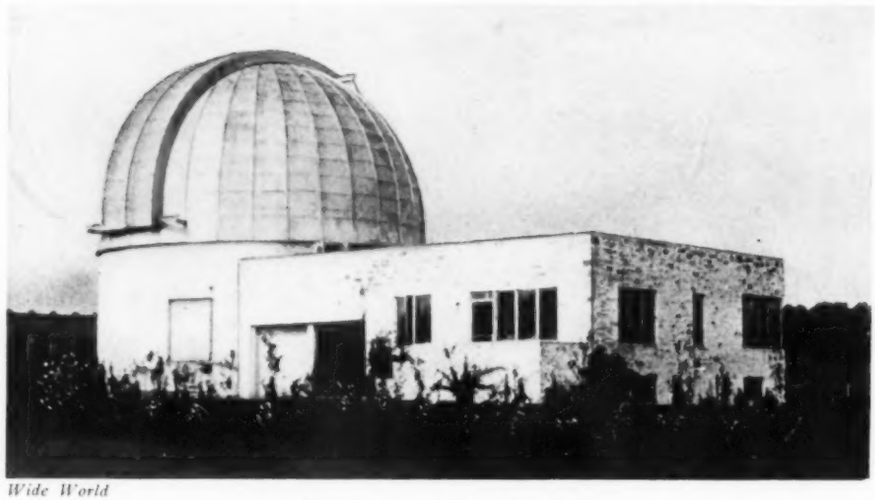
James D. Dusenberry, former President of the United Fireproof Construction Company and now Director of the Construction and Real Estate Division of the Federal Housing Administration, has been named Chairman of the Council.

PROGRESS OF BETTER HOUSING PROGRAM

The Federal Housing Administration reports a constantly increasing volume of additions, alterations and repairs throughout the country, as shown in information supplied to the Bureau of Labor Statistics of the Department of Labor. Figures made public December 26 covering building permits in 772 cities showed modernization work in November of $13,071,000 against $8,110,000 for the same month last year, a gain of 62%. This compares with a 50% gain in October, 27% in September and 18% in August over the same months last year.

All geographical divisions showed gains as follows: East South Central, 136%; South Atlantic, 101%; Mountain, 86%; West North Central, 80%; West South Central, 78%; East North Central, 71%; Pacific, 51%; Middle Atlantic, 45% and New England, 32%.

Many of the cities reporting installations, which also are included in the Federal Housing Administration's modernization program showed a remarkable volume. Cincinnati led in this type of work with $216,645, considerably more than its volume of alterations and repairs. Milwaukee was second with $152,020. Washington third with $68,370, Philadelphia fourth with $47,430, Des Moines fifth with $52,792 and Indianapolis sixth with $35,106.



Wide World

New Observatory at Princeton University.
Features: movable floor and movable 23-inch telescope.

Keystone View

New $9,000,000 Department of Justice Building in Washington.
Zantzinger, Borie and Medary, architects.

HOUSING REPORT SENT TO ROOSEVELT

Recommendations have been submitted to President Roosevelt by the National Association of Housing Officials to serve as a basis for a long-range low-cost housing program in the United States. The recommendations were drafted by a group of international authorities on housing, including several Americans, following a six-weeks tour of fourteen American cities. They were discussed and modified at a housing conference attended by nearly a hundred American housing leaders in Baltimore in October.

Establishment of a permanent Federal housing agency coordinating all sections dealing with housing activities is among the important recommendations of the document, which was transmitted by Ernest J. Bohn, president of the National Association of Housing Officials.

The report is signed by three European housing experts — Sir Raymond Unwin and Miss Alice Samuel of England and Dr. Ernst Kahn, formerly of Germany— and by a large number of leaders in the American housing field, among them Col. Horatio B. Hackett, director of the housing division of the PWA.

WINDOW CLEANING CODE

Window washers are now given security by the Window Cleaning Safety Code, recently approved by the American Standards Association. The code was designed to be used by window washing concerns, manufacturers of equipment used for this purpose, building owners and managers, and to guide state and municipal authorities in writing regulations.

Hundreds of window washers are killed or injured yearly in the United States. Insurance rates range from $2 per $100 pay roll in Washington, to $19.88 in Nebraska and a minimum of $305 per man in New York.

The Code Committee, finding that a great deal of evidence pointed to defective equipment used by the window washers in their work, has written standards for safety belts, swinging scaffolds, boatswain's chairs, portable and sectional ladders, and anchors fastened to window sills to which belts are hooked. As in all industrial occupations, the negligence of the worker plays an important part in window-washing hazards. This safety code calls attention to this fact and calls upon the employees to exercise caution.

Ewing Galloway

Progress photograph of Boulevard Gardens housing project in Queens, New York, being erected with aid of PWA funds by Dick-Meyer Corporation. Theo. Engelhardt, architect.

Wide World

Left: James A. Moffett, Federal Housing Administrator, starting renovation of tumble-down Chicago dwelling.
Right: Three hours later, the same shack is being modernized into a Cape Cod cottage.

CONSTRUCTION INDUSTRY MEETINGS

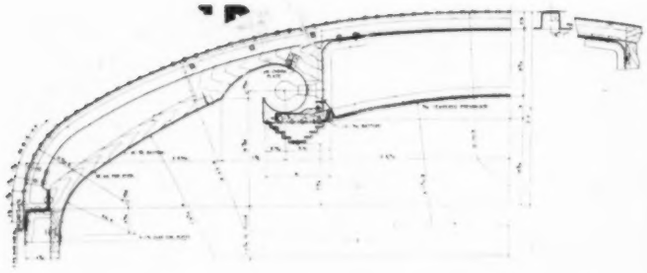
That the Construction Code Authority is getting past its initial organization difficulties and that the Construction League of the United States is about to strengthen itself as the independent spokesman of the entire industry seemed to be the sense of the joint meeting of the two bodies held at Knoxville, Tenn., December 5 to 8.

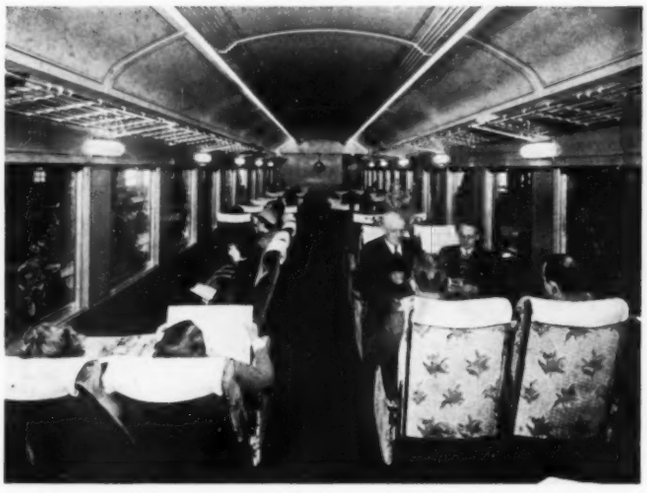
The Construction Code Authority held its open meeting at Knoxville as part of a plan to bring the code to the industry, instead of requiring the industry to come to Washington. Besides industry and divisional code authority members there were in attendance general and special contractors from all parts of the South. The Code Authority discussed a tentative plan for securing code compliance by organizing local code compliance councils, which would bring in local representatives of divisional code authorities and representatives of allied interests not operating under the Construction Industry Code. They would be chartered by the Construction Code Authority, make their own by-laws and elect their own officers. The plan, if adopted, would not only merge existing code compliance boards, but also contract-registration offices and bid-depositories. Prominent in the code authority proceedings were the three architect and engineer members, Chairman Stephen F. Voorhees, Vice-Chairman John F. Hogan, and William Stanley Parker, code authority representative of he A.I.A. Divisional codes for the architects and the engineers were among those reported as still pending before the NRA.

The Construction League elected Col. John F. Hogan chairman to succeed Mr. Alonzo J. Hammond. It presented a platform, or program for future action. The League's functions were defined as those of an independent spokesman for the entire construction industry before the public and public officials, coordinator of construction industry interests with others allied to construction, promoter, educator and legislative representative of the industry. The League will attempt to secure an adequate budget to employ an executive director and staff, whose duty it will be to organize educational and promotional work and to organize state and local leagues.

Concurrent with the meetings of the two general industry organizations were meetings of the National Planning and Adjustment Board, the industry's labor relations board, whose chairman, appointed by President Roosevelt, is Sullivan W. Jones, architect. Visitors to the meeting had the opportunity to visit the offices of the T.V.A., the Norris Dam and the town of Norris, and to see the football game beween the University of Tennessee and Louisiana State University.

Among those who addressed the several meetings were Arthur D. Whiteside, of the National Industrial Recovery Board; William L. Mitchell, Regional Compliance Director of the NRA; Willard R. Chevalier, Vice-President of McGraw-Hill Publishing Company; M. J. Bevine, Vice-President of American Radiator and Standard Sanitary Corporation; Major George L. Berry, Divisional Administrator of NRA; James A. Moffett, Federal Housing Administrator; and Carl A. Bock, Assistant Chief Engineer of the Tennessee Valley Authority.





Above: Lighting detail and interior view of new Norfolk & Western Railway day coach. Chairs can be tilted or revolved. Car is air conditioned.

Below: Interior views of new streamlined coaches of the New York, New Haven & Hartford, designed by Walter Dorwin Teague. Cork floor covering. Movable seats. Air conditioned interiors.

Wyatt Davis

GENERAL ELECTRIC SPONSORS COMPETITION

Cooperating with the Federal Housing Administration and to stimulate interest in small home building, Gerard Swope, president of the General Electric Company, has announced that his company will sponsor a national competition, beginning January 1, among architects for designs of small homes that will provide the utmost in modern convenience and livability.

A total of 54 prizes, aggregating $21,000, will be offered to architects and designers. It will be possible for one architect to win awards amounting to $5,000. Demonstration homes will later be constructed in various parts of the country.

"This competition will enable the public to get a new vision of what an inexpensive home can be like in this new era of our national development," Mr. Swope said. "Science has made great strides in home electrification even through the depression years. There is no longer any need for the homemaker to tire herself out with household labor. Most of it can be done more simply, efficiently, and less expensively by electrical servants. Washing, ironing, sweeping, cooking, and washing the dishes, can be done electrically at little cost. Great improvements have taken place in home lighting. The toilsome, troublesome heating problem has been solved, and air conditioning has arrived to make the home healthier, cleaner, more comfortable the year around.

"All of the new advances in the art of living should be made available to everybody, and we are confident the architects of the country will be able to show in their designs just how this is to be done in the small homes."

The project has been approved by the Federal Housing Administration and the Bureau of Home Economics of the U. S. Department of Agriculture, the American Institute of Architects, and the National Association of Real Estate Boards will cooperate in its conduct. J. F. Quinlan, General Electric Company, New York, has been named as director of the competition, with Kenneth K. Stowell, Editor of the **Architectural Forum**, as professional adviser.

NEW FABRICS EXPECTED

Check for future watching three new fabrics, advises **Science Service**: one woven of copper wire and conventional textile fibers, another which is creaseproof, and a third water-repellent.

In the first, copper wire is inter-spun with cotton, silk, wool or rayon into threads which can be woven or knitted without special machinery. The fine copper wire is lacquered before spinning. List as advantages: prevention of stretching and shrinking and conduction of electrical current.

Fabric which will conduct electricity should find wide use. A rug might be "plugged into" the nearest socket and heated to warm a room. The fabric in airplane wings would be warmed to prevent ice formation. Heated clothing might become a commercial instead of an experimental fact.

Creaseproof fabric is an English invention available in America through license. The **Technology Review** in reporting the production of the fabric states that in the finishing stage the textile is treated with a type of resin.

Water-repellent treatment may be applied to almost any fabric from silk stocking to an overcoat. It consists of applying colloidal wax in a water solution which lasts between washings. The waterproof wax coating is transparent and may be applied in home or commercial laundries without injury to the fabric in a manner, presumably, like starching.

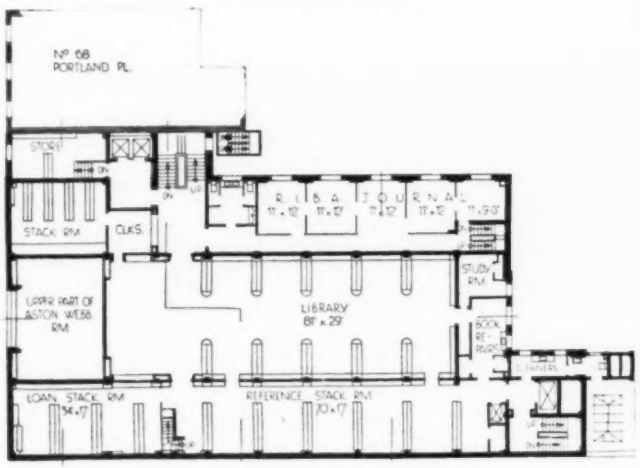
RADIO SETS OUTNUMBER TELEPHONES

A banner crop of radios was produced by the radio industry in 1934. Four and one-half million new sets were added to those already in use to bring the total for the nation up to 19,000,000. This is 8,000,000 more radios than there are home telephones. The 19,000,000 sets do not include those in homes having two and three sets, nor some 2,000,000 sets now installed in automobiles, according to the trade journal **Electronics**.

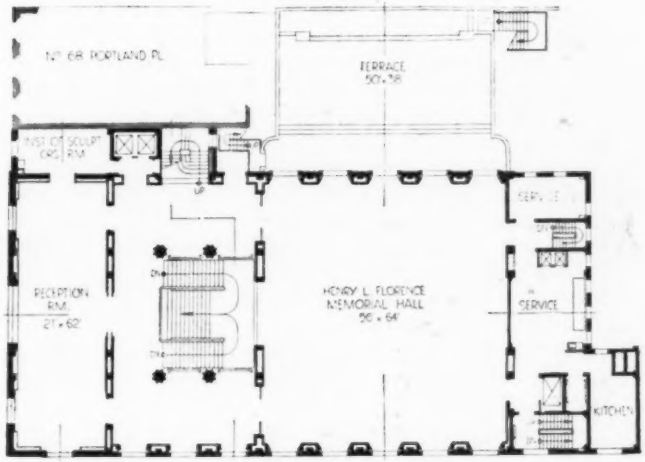
Interior view of the new headquarters of the Royal Institute of British Architects at Portland Place, London, opened formally on November 21. At the Institute's Centenary Banquet the Prince of Wales congratulated the architect, G. Grey Wornum, "on his fine conception of modern design," and urged his listeners "to carry the principle of mass production over to architecture and the building trades." D. Everett Waid, chairman of the A. I. A. Building Committee, was invited but unable to attend the dedication ceremonies. Mr. Waid reports that his committee is making progress toward achieving a new building for the American Institute of Architects. The general design, prepared by Mr. Waid and the late Charles Platt, has been officially approved and construction awaits satisfactory financial arrangements now being furthered.

Wide World

THIRD FLOOR PLAN



FIRST FLOOR PLAN



HOUSES, INC.

Business Week, in its December 15 issue, reports the development of a new prefabricated home built in standardized sections, easily assembled and easily extended, with full electrical equipment.

It is being shown to selected visitors by Houses, Inc., New York. The sample house (one has been erected in New York's Grand Central Palace) is the outcome of under-cover experiments carried on for several years. Sales will begin in February after final tests of heating equipment in units to be built near New York and occupied by observing engineers. First of the 4-room-and-bath houses will sell (erected) for $3,900 cash. Later the mass market will be entered with installment selling at something under $40 per month. This will pay for the structure in 15 years, includes life insurance to the amount of the buyer's liability and fire insurance on contents.

The 4-room unit can be used as the nucleus of a structure including other standardized rooms or additions on the ground level. A 6-room cottage will cost around $5,000.

Full electrical equipment is built-in and is included in the cost. Items are heater, air conditioner, radio, kitchen range, refrigerator, clothes washer, percolator, toaster, iron, etc.

Frame of the house is of steel. Wall panels are of cement and asbestos between which is 2 inches of special insulation. The roof is almost flat and is Barrett specification. Pilasters are a special metal with an aluminum base. The entire house may be painted but only the doors and jambs require it. Window frames are metal. Screens and storm windows are standard equipment. A special paper that can be washed covers the inner walls. Ceilings are of a sound-deadening composition. Floors are of wood composition which is fire-resistant.

Houses, Inc., is a holding company under which other units (such as financing and construction) will later be organized. Foster Gunnison, president, announces that his organization is independent of all manufacturers; nearly all the electrical appliances and equipment in the New York sample house, however, are from General Electric, according to **Business Week.**

$6,000,000 POST OFFICE LACKS LETTER DROP

Newspapers in December carried a story that Pittsburgh's new $6,000,000 post office has a troublesome defect. There are shiny, gilded depositories bearing bronze signs, "Special Delivery," "Air Mail" and "Letters in Bulk," but none apparently designed for the person who has only one letter to mail. The plain truth, says Postmaster Turner, is that the architects forgot all about it.

INDIVIDUALS HAVE VARYING RESISTANCE TO ELECTRIC SHOCK

Danger of death from electric shock from the ordinary household current is stressed in a report to the New York Electrical Society by Dr. W. B. Kouwenhoven, Johns Hopkins University electrical engineering professor. He and his associates have found that alternating current is much more dangerous at low voltages than at high voltages. On high voltages the muscle contraction may be severe enough to throw the person away from the contact with the electricity, while on low voltage circuits it is often impossible for him to let go. Low voltage direct current is not nearly so dangerous as low voltage alternating current. There is only one authentic record of a man being killed by 110 volts from a direct current circuit, but there are many such deaths from the 110-volt alternating circuits. The danger from households circuits is particularly great in bathrooms, cellars, garages and other damp places.

Never reach for an electric device while in the bathtub or while still wet from the bath, Dr. Kouwenhoven warned. Don't use an electric curling iron in the bathroom. He noted with approval the Massachusetts law which forbids placing electric switches inside the bathroom. Neither switchplates nor pull sockets should be within reach of the bathtub, and there should be no electric heaters in the bathroom, in his opinion.

Wide World

This view of a subsistence homestead at Crossville, Tennessee, appeared in the October 1934 issue with a caption stating the cost of the house to be $2,000. Inquiries from readers as to the plausibility of such a low cost were passed on to the Subsistence Homesteads Division. The explanation, according to the Division's reply, is that it was the cash cost of the house which was under $2,000. The reply continues:

"At our Crossville project, which is for a so-called 'stranded' group of former miners and lumbermen, the self-help work method is used. Homesteaders, themselves, are improving the land and building the houses, being paid partly in cash and partly in credit against the purchasing price of their homestead.

"The house in question cost approximately $1,800 in cash for materials and cash labor, and the homesteaders who worked on it received approximately $800 worth of credit, making the total cash plus credit cost approximately $2,600. The house contains six rooms with a bathroom, but is without a cellar or central heating plant, dependence being had on the fireplace and range.

"The Crossville project has been particularly fortunate in having available on the place a supply of crab-orchard stone and plenty of timber, including oak and pine. Due largely to the initiative of the project manager, a second-hand sawmill was purchased very cheaply and the project has been turning out its own timber. We have, therefore, these houses constructed with some of the country's finest building stone, with hand-hewn oak beams, and knotty pine paneling, constructed at the remarkably low cost given above."

Keystone View

The new building of the Mellon Institute of Industrial Research in Pittsburgh. Janssen and Cocken, architects

TURKEY GOES PRE-TURKISH

Istanbul, one of the truly glamorous cities of the Old World, is being remade, according to **Science Service**. It is to reappear as it was before the Turkish invasion in 1453, Mustapha Kemal Pasha, president of the Republic of Turkey, has decided. Plans are under way. To show what the city called Constantinople was like in the Middle Ages, a professor of the history of architecture at the Academy of Fine Arts has prepared maps based on old charts and records of different periods before the Turkish invasion.

With certain modern buildings torn down and historic structures restored, Istanbul will have back many long-lost vistas and skylines. The famous Mosque of Saint Sophia is undergoing extensive repairs. Gardens of Byzantine emperors are to bloom again. Parks, palaces, and religious structures are being refurbished or otherwise restored.

In recent years, Rome has been busy resurrecting ancient grandeurs. The United States has its restoration of a colonial town at Williamsburg. By restoring medieval Constantinople, the **Science Service** writer remarks, Turkey is showing in one more way her determination to keep up with the times.

ELECTRIFYING THE HOUSEHOLD

Demand for electrical appliances for the home, of which the kitchen stove and the refrigerator are two of the most popular, has been growing steadily, the Edison Electric Institute reports. Electric power output, too, has been growing steadily, more because of domestic consumption than because of any other reason.

The thoroughly electrified home—for quite a while the dream of the power industry—is a housewives' reality now, although not that of a multitude of housewives. In the new Westinghouse model home is exhibited the extent of electrification. Automatic sliding doors open and close without being touched. There is radio control for the garbage can. Infrared and ultra-violet lamps give light; the bathrooms dry their own towels; the dishwasher both washes and dries the dishes, and there is, of course, the electric eggbeater. The weather is artificially controlled by electricity. The "thermotemp" keeps the temperature the same winter and summer.

Many of the new electric devices are not classed as luxury goods; manufacturers in the last year have been able to produce, for example, ranges at half the price of the ranges of not long ago. That is true, too, of refrigerators.

WINDOWLESS FACTORY PLANNED

The Wallingford Steel Company has awarded to the C. F. Wooding Company the general contract for construction of a windowless office building which will contain a complete air conditioning system for both summer and winter use. The building is planned to be soundproof and will be illuminated by both incandescent and mercury vapor lamps.

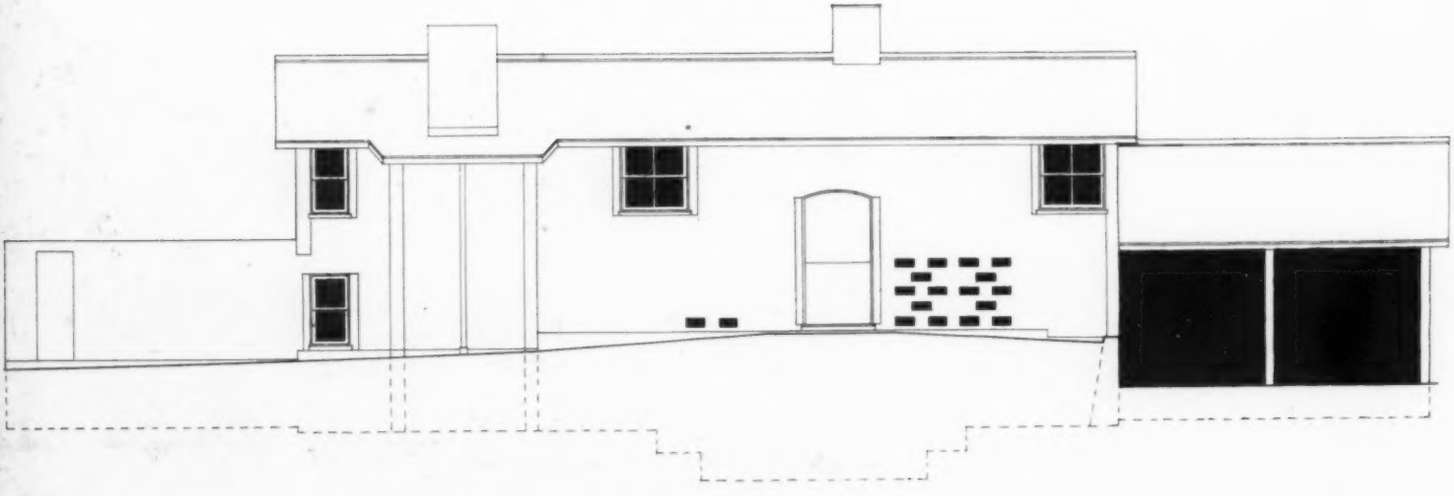
The steel company's plant at Wallingford, Conn., is located on sandy terrain, from which clouds of dust are constantly stirred up, and switch-engines on nearby sidings create a smoke nuisance. These local conditions led to the decision to erect a building without windows in which ventilation with conditioned air would be possible.

PORTFOLIO OF HOUSES

HOUSE OF MRS. E. C. CONVERSE
CARMEL - BY - THE - SEA, CALIFORNIA
WILLIAM WILSON WURSTER, ARCHITECT

Photograph by Roger Sturtevant

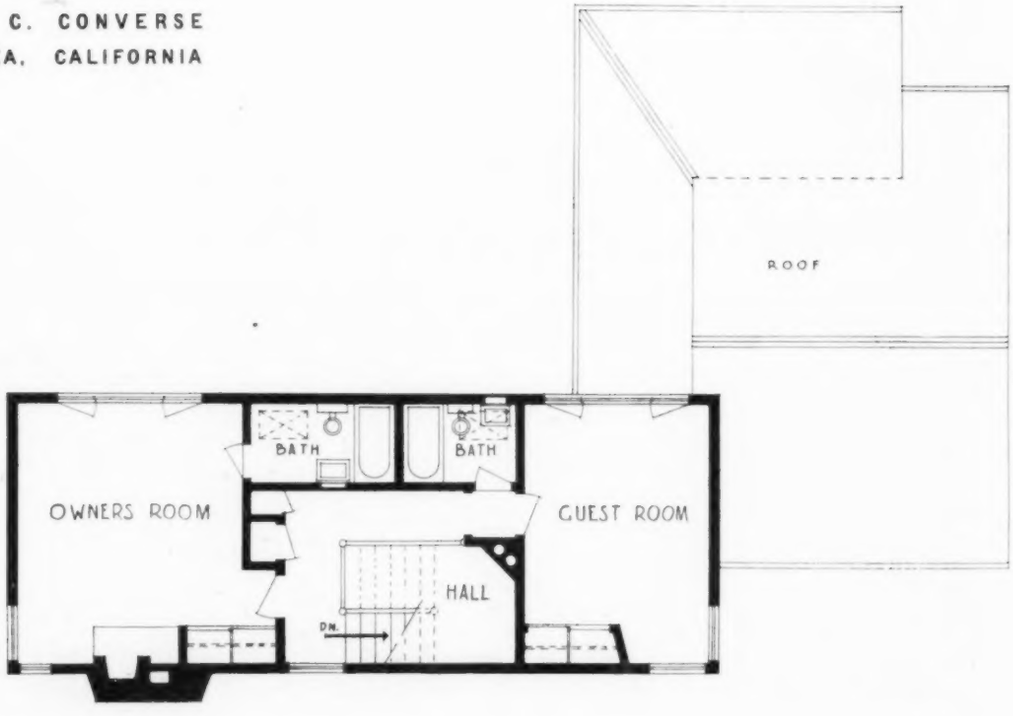
HOUSE OF MRS. E. C. CONVERSE, CARMEL-BY-THE-SEA, CALIFORNIA



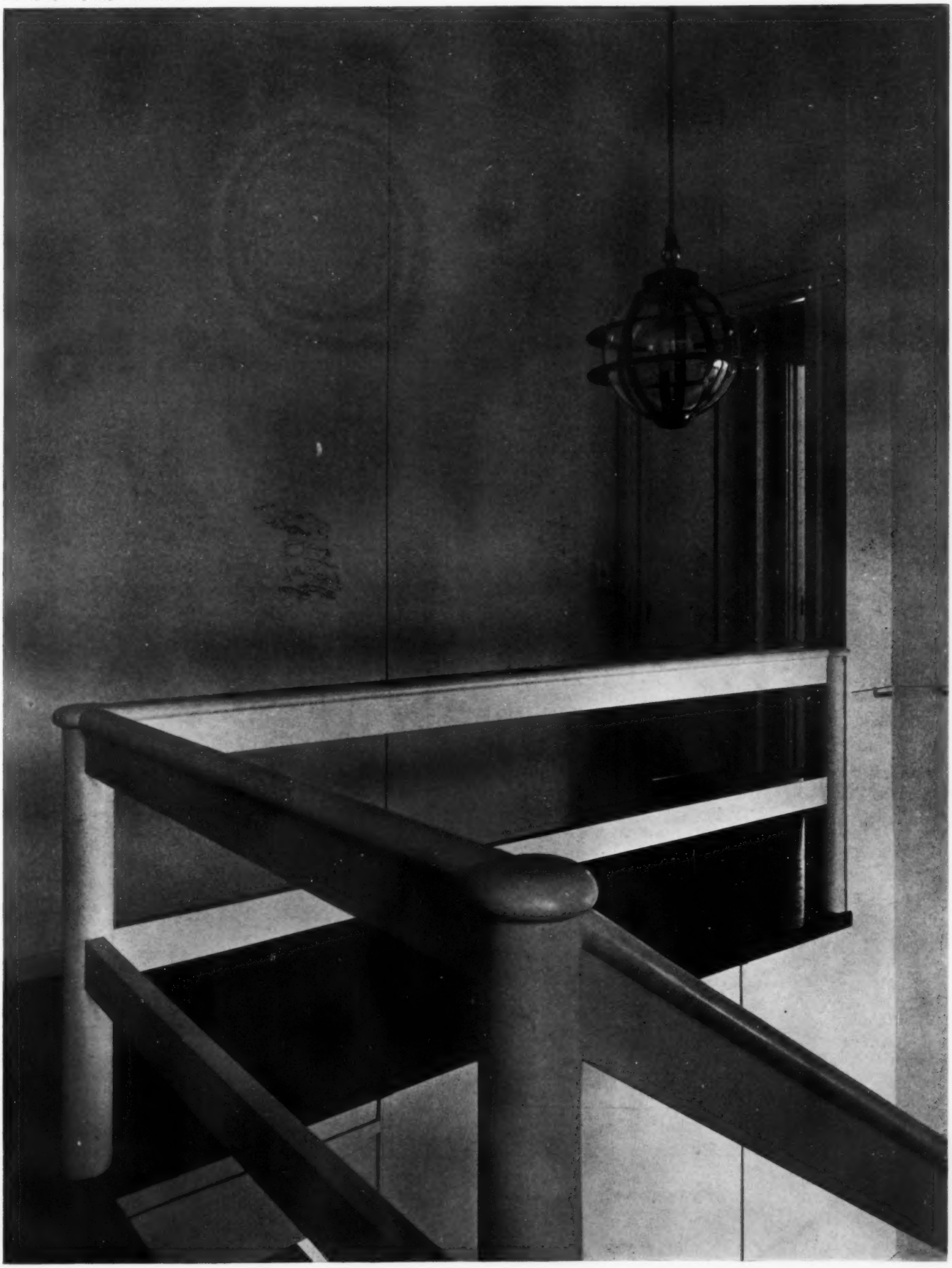
WILLIAM WILSON WURSTER, ARCHITECT
THOMAS D. CHURCH, LANDSCAPE ARCHITECT
JAMES KEMBLE MILLS, INTERIOR DECORATOR

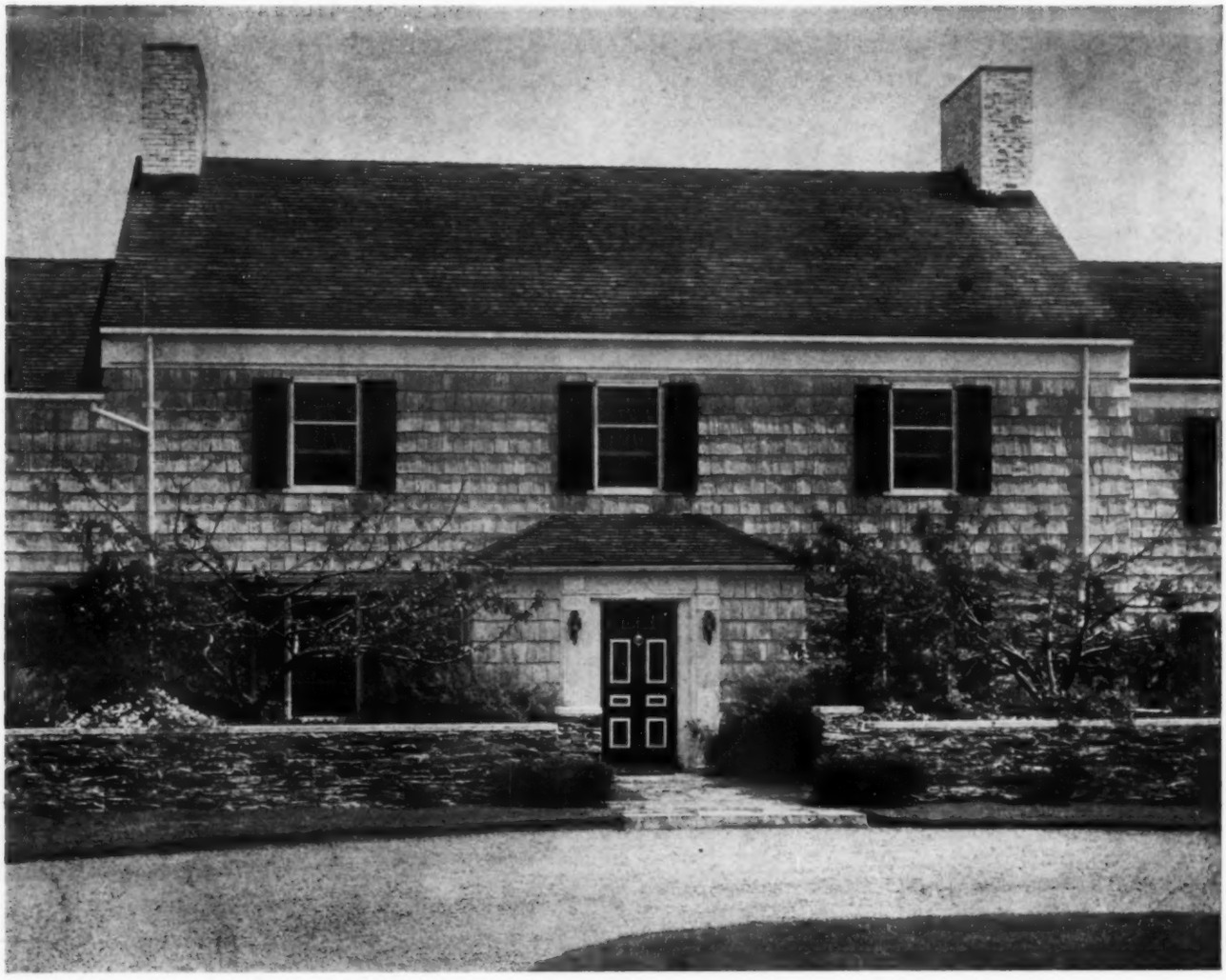
Photographs by Roger Sturtevant

HOUSE OR MRS. E. C. CONVERSE
CARMEL - BY - THE - SEA, CALIFORNIA

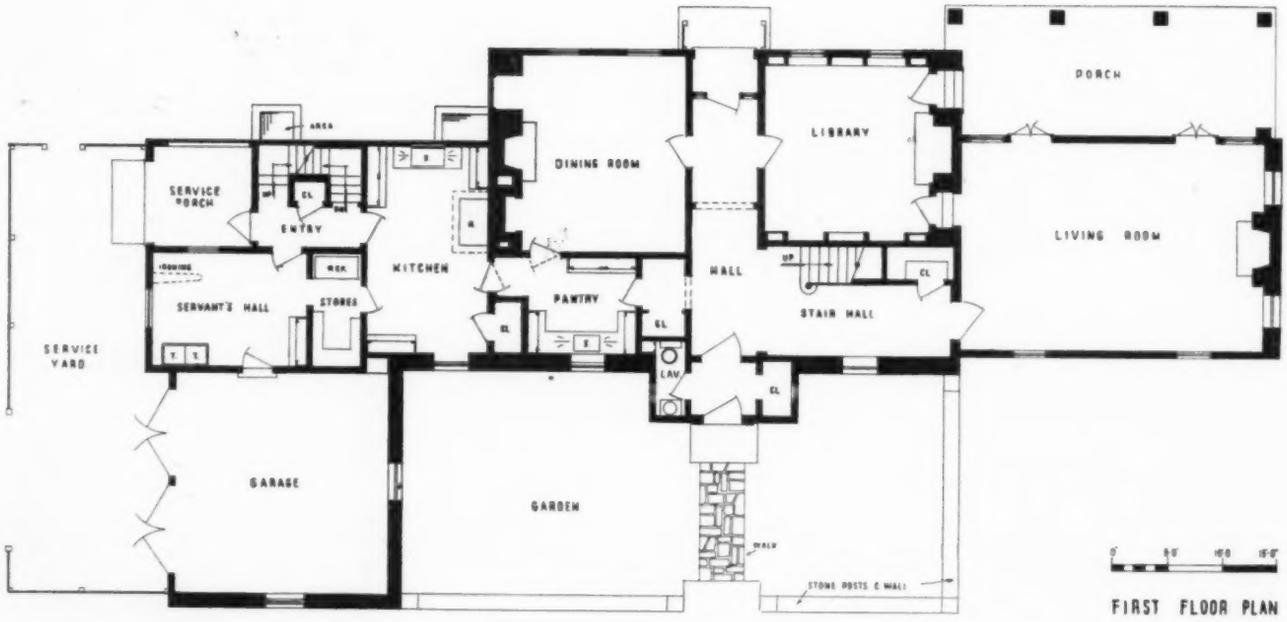


Photographs by Roger Sturtevant

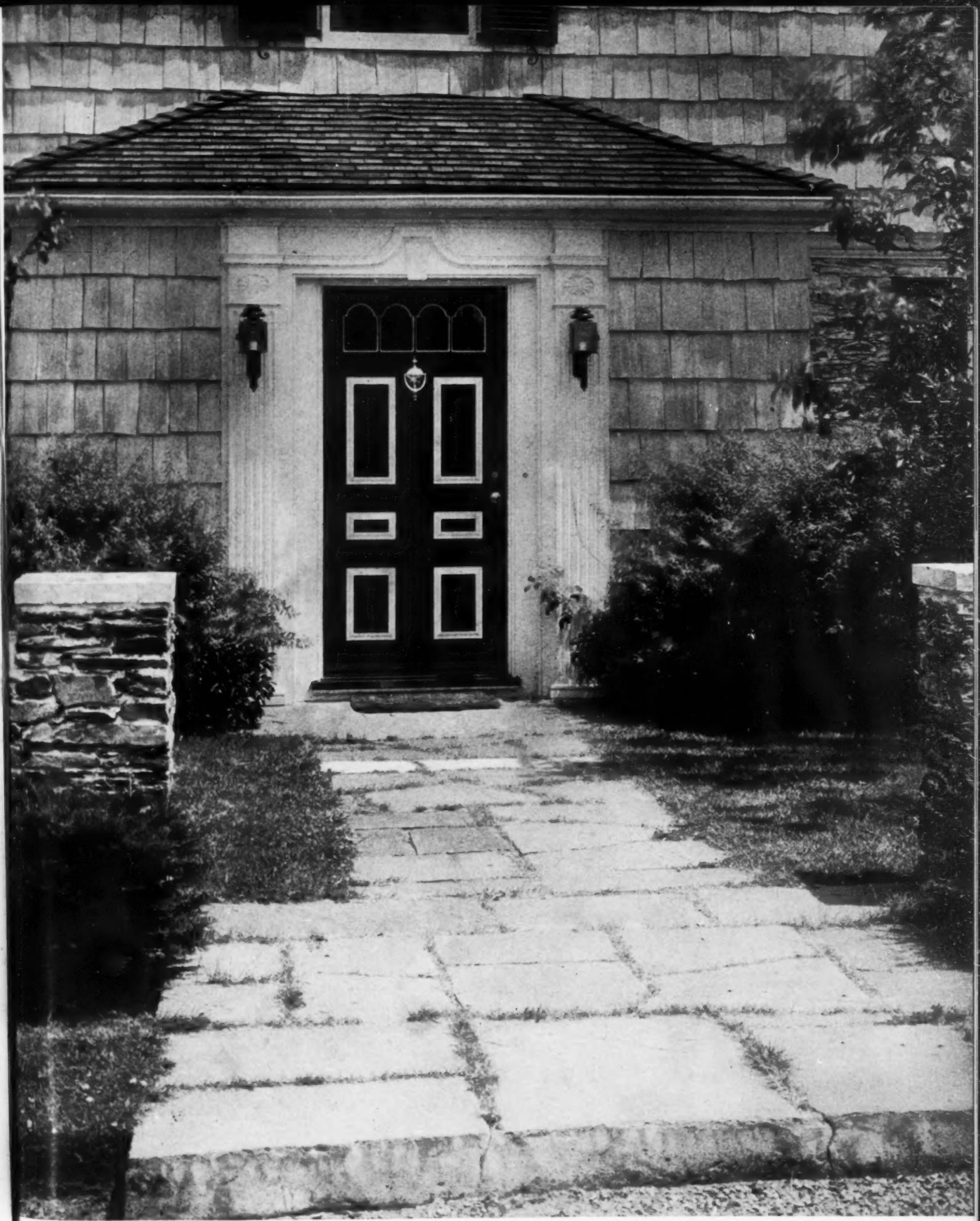




Photographs by R. Tebbs

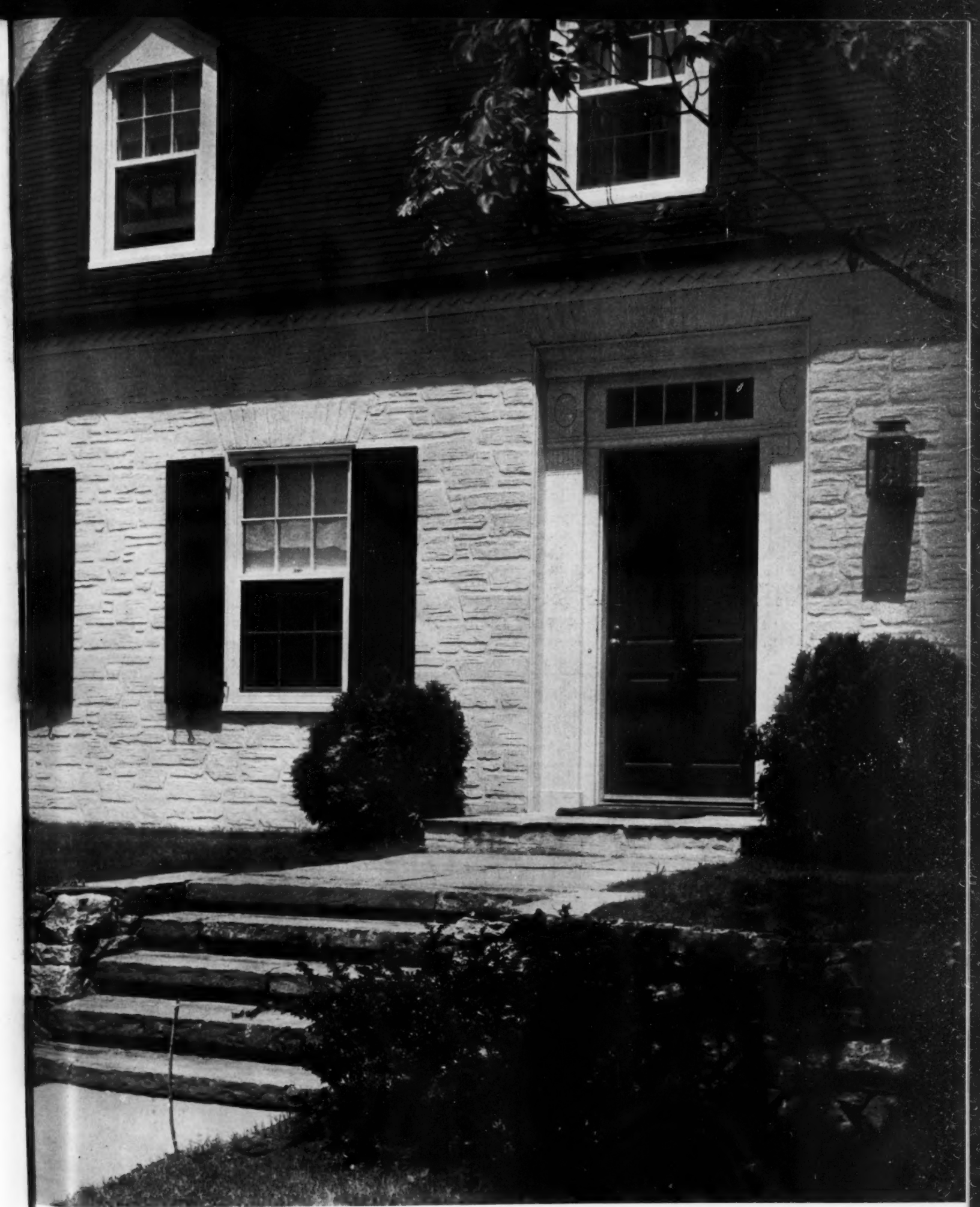


HOUSE OF JOHN J. O'DONNELL
NEWPORT, RHODE ISLAND
TREANOR AND FATIO, ARCHITECTS

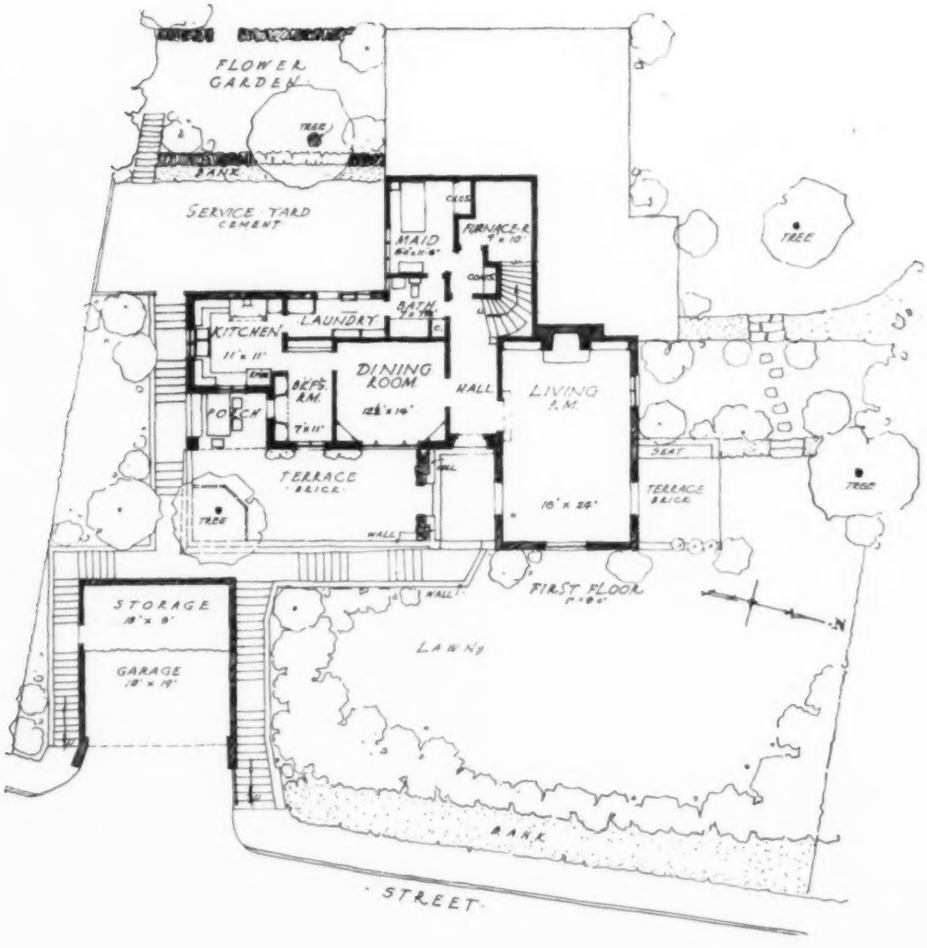


Photographs by R. Tebbs

HOUSE OF M. L. PRINDLE
BRONXVILLE, NEW YORK
PENROSE V. STOUT, ARCHITECT



HOUSE OF MAURICE SAETA AT LOS ANGELES
WINCHTON LEAMON RISLEY, ARCHITECT



"Painting, sculpture, all furnishing and decoration, are the escaped subsidiaries of architecture, and may return very largely to their old dependence."
—From *The Work, Health and Happiness of Mankind*, by H. G. Wells.

THE ARCHITECT AS DESIGN AUTHORITY

BY JOHN GLOAG

There is nothing so powerful in the world today as the hatred the architect has for his client, said Alexander Woollcott as we discussed at breakfast some of the American peculiarities of the profession. There was profound observation behind that remark; which certainly applies to England, and, unless the architects I met during my stay in America were exceptional men, to America also. I knew it existed, but until Mr. Woollcott suddenly isolated it, and labeled it as a force, its significance as a symptom of the immense dissatisfaction that pervades the architectural profession did not strike me.

Why does this hatred exist? It has not always existed. There have been difficulties, such as those Vanbrugh experienced with the impossible Sarah, the mean, spiteful first Duchess of Marlborough, when he built Blenheim Palace; or those endured by Wren when he encountered the timidities and pettifogging policies of the Commissioners of St. Paul's; but from 1660 to 1820 or thereabouts the relations of the architect with his client were not clouded by conflict and terminated in ill-will. The architect then was dealing with educated patronage. He had principles of design, and the client understood them; and they were universally applicable, so that the architect was the master authority on design, and would be delighted to devise any little trinket for his client, or to create patterns for carpets, chair coverings and curtains, or shapes for lamps or door knockers. His control of design was recognized and encouraged, and within a century he lost nearly all of that wide authority, and is now engaged in an intermittent battle to preserve the remnant, for even in building his authority is now questioned by the client.

The situation today is that the architect has principles: he knows what is right. The client has prejudices: he knows what he wants. The result is stalemate, and there is nothing to be done about it but to upset the board and the pieces and for the architect to start in on a new game, and to say goodbye to all the squabbling that must arise when patronage is educated in the wrong way. For patronage is educated in America; far more than it is in England, where a carefully-cultivated brutality of outlook about anything connected with art makes it as difficult to explain to the average Englishman what is meant by design as it would be to expound the theory of relativity to a palaeolithic savage. Patronage for design in America has been oriented by tradition. The "charm" of the Colonial house and home and interior has been exploited with all the allure of fine color printing in magazines and advertisements from Canada to Mexico for so long, that the taste of cultivated people who care for their surroundings has ossified, and their imaginations are unrefreshed by experiments that would bring them into their own century.

The "styling" of industrial design so often means the application of this conventional "good taste," which is good only in the sense that it tolerates no uncomely thing, unless the sentimental or historical associations prove irresistible. This form of taste enables its exponents to select from the past American and European things that are good to look at and pleasant enough in use. It often degenerates into mere collecting, and from that into a squalid accumulation of objects that may or may not have any merit of design. It is when this form of taste touches the characteristic products of the commercial machine age that it becomes ridiculous.

That masterpiece of luxury and efficient transportation, "The Twentieth Century Limited," which brought me from Chicago to New York, is a sleek and lovely train of steel. But the ceiling of the observation car has imitation beams pressed out of the metal, and is decorated with writhing flowers and fruit; while the club car has its steel sides painted to imitate the grain of walnut, with lines painted to imitate satinwood and other colored inlays. And it is the innumerable men and women with "good taste" who are responsible; for they demand and get associations, sentimental and traditional; and although they live in tall, airy and spacious modern buildings, they make therein little caves full of antique plunder; loot from the seventeenth and eighteenth centuries, cunningly arranged, elegant,

comfortable or heartily old world, according to temperament.

As patrons, are they worth bothering about? Can't the architect who wants to mean something to his own century leave them to the decorators? Design can't concern itself only with stage scenery; and awaiting the architect is a new field of patronage, promising abundant opportunities for experiment, which may enable him to regain his position as *the* authority on every branch of design, the position he has been losing for a hundred years. In that field he can become quickly established; but to enter it means admitting to his own professional self that architecture in the machine age means more than building. His responsibility for design, once valid and far-reaching, and today tentative and shaken, must extend beyond building to the products of organized industry; and he must accept the industrialist as a patron, and see to it that the industrialist accepts him as an authority.

The architect has more qualifications for assuming this responsibility than he probably suspects, and they are exactly the sort of qualifications the industrialist understands and desires. Here is a short but impressive list:

1. The architect understands the nature of materials, and can grasp their character readily and comprehend their limitations and has the imagination that will lead him to explore new ways of handling them.
2. His training in the handling of materials of the most diverse kind enables him to grasp the essentials of various industrial processes by which those materials are manufactured and manipulated.
3. He is familiar with the technique of standardization. He respects the value of standard units.
4. With the possible exception of people engaged in scientific research work, the architect is the only type of professional man whose whole training has familiarized him with planning in its widest and most comprehensive sense. Like an industrial engineer planning a sequence of machine production, he has to foresee the working of his plans in all their ultimate ramifications of detail, and he has to imagine all manner of contingencies and provide reserves of labor, power, material and money to cover them. He has to erect with every job he plans an economic structure which will carry it through to completion. And this leads to his next qualification.
5. He understands the meaning of costs.
6. Finally, he can produce the not unimportant qualification of having passed an examination which permits him to practice as a designer.

No artist or free-lance designer could possibly assemble such an array of arguments for the wooing of industrial patronage. I suspect that industrial administrators are as shy in America as they are in England of the artist; that they distrust the man who talks to them about "design," but are prepared to accept good design if it is presented to them almost as a technical process. Designers are being employed, and are securing adequate fees for bringing civilized coherence to the form of such things as vacuum cleaners, water heaters, refrigerators, radio sets, scales, cameras, alarm clocks, kitchen and bathroom units, and washing machines—the typical products of the machine age; even as the eighteenth century designer (who was the architect) gave to the typical products of his age the forms acceptable to the canons of good taste.

The architect must break down the idea that he is an "artistic luxury." There is a danger that the industrialist might put that label on him, unless he makes the whole business of design seem, as indeed it is, a highly skilled technical operation. In England the designer has been the missing technician in industry since the beginning of the industrial revolution; in America his place has been usurped by the stylizer who is often somebody who merely "applies" some touch of ornament or imposes some refinement of shape that will accord with what is thought to be modish. But it is to the credit of American industry that it has recognized that its products should be "styled." England for generations has been afflicted with what can only be described as engineer's art: products mutilated and disguised by men who were urged to hide the work of the machine with an "arty" touch.

The architect has the power, if he will cultivate it, to kill the notion that a designer can be called in to operate a separate process called "styling." He can teach industry that design is the initial process. He has at the moment perhaps his greatest opportunity for educating industry in design; for except in advertising technique, American industry is uneducated; and the function of the designer is still confused with all kinds of inherited ideas about people with a talent for "drawing" or decoration or ringing the changes on old patterns. When Norman Bel Geddes created a highly successful standardized stove unit for the Standard Gas Equipment Corporation, he not only swept away the older types of apparatus, with their untidy agglomeration of gadgets and their tops and sizes of imitation marble—he swept away an accumulation of misconceptions about the nature of design and the character of the designer. If only architects would give their talents and the advantages of their training to industry, they could, through this close association with machine production, so affect the form of things in everyday use, that America and the rest of the world would wake up to discover that the machine age had found itself, and that they were living in a new renaissance of design that made the conventional "good taste" of the architect's clients today look as haggard and pathetic as old world fancy dress the morning after the party.

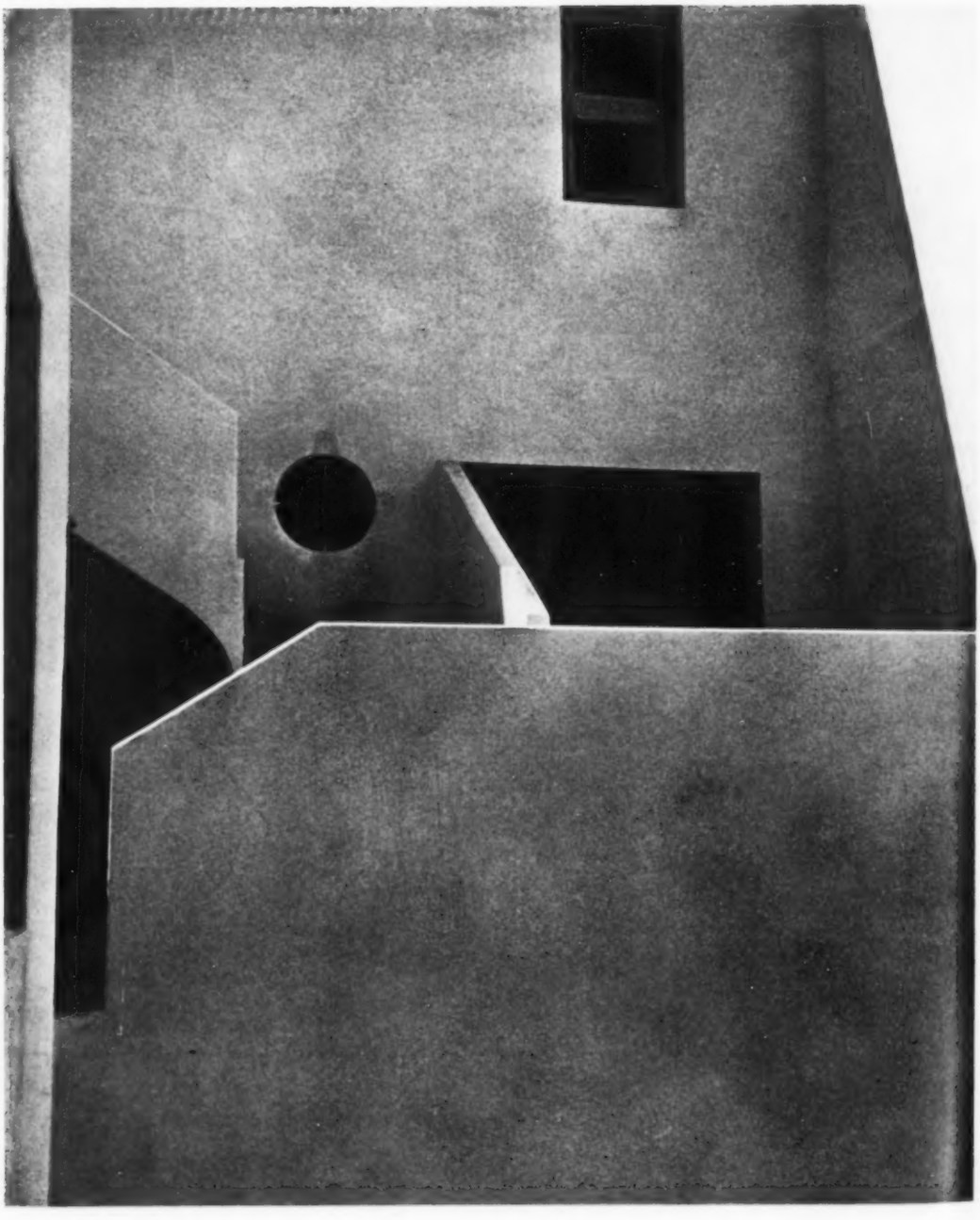
Architects have a deeper responsibility to contemporary civilization than most people. Their work exposes the quality and fiber of their civilization to the future. In the commercial machine age their work must cover every branch of design. They cannot wait for taste to change: they must change it, and they can, through industry. And as industrial design improves, becomes more lucid and sane and orderly, the lovers of the old Colonial home may begin to think that great hulking tables from the seventeenth century, and wood condemned to perpetuate the shapes that were so felicitous and suitable for eighteenth century rooms, clothes and manners, are as out of place in a tower of steel and glass as the bronze sconces, enameled candles, and glass lamps imitating flames, that illuminate the observation car of "The Twentieth Century Limited."

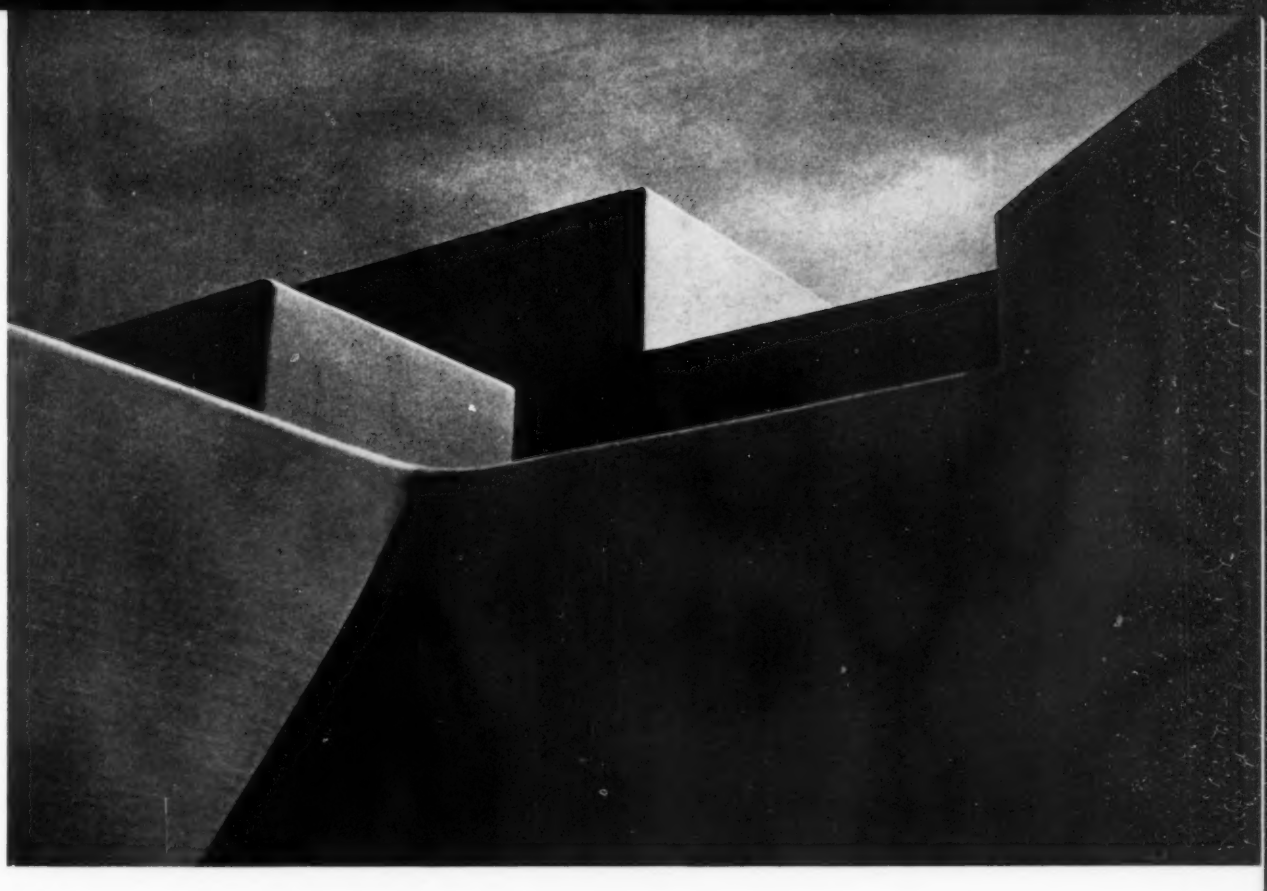
RECENT WORK OF A MEXICAN ARCHITECT—— LUIS BARRAGAN

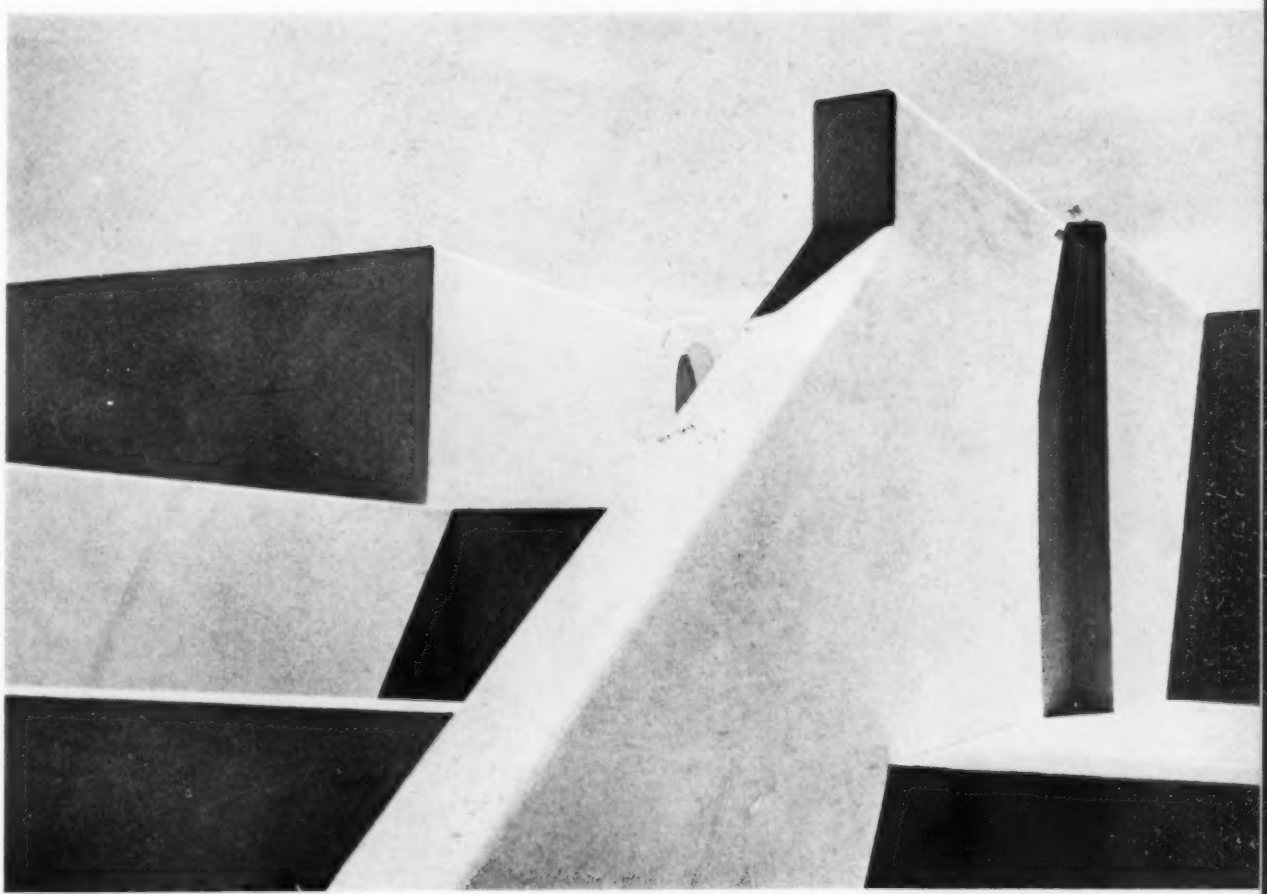
THE ARCHITECT'S OWN HOUSE (REMODELED) AT CHAPALA, A LAKE RESORT IN MEXICO

THE ARCHITECT'S OWN HOUSE (REMODELED) AT CHAPALA, MEXICO

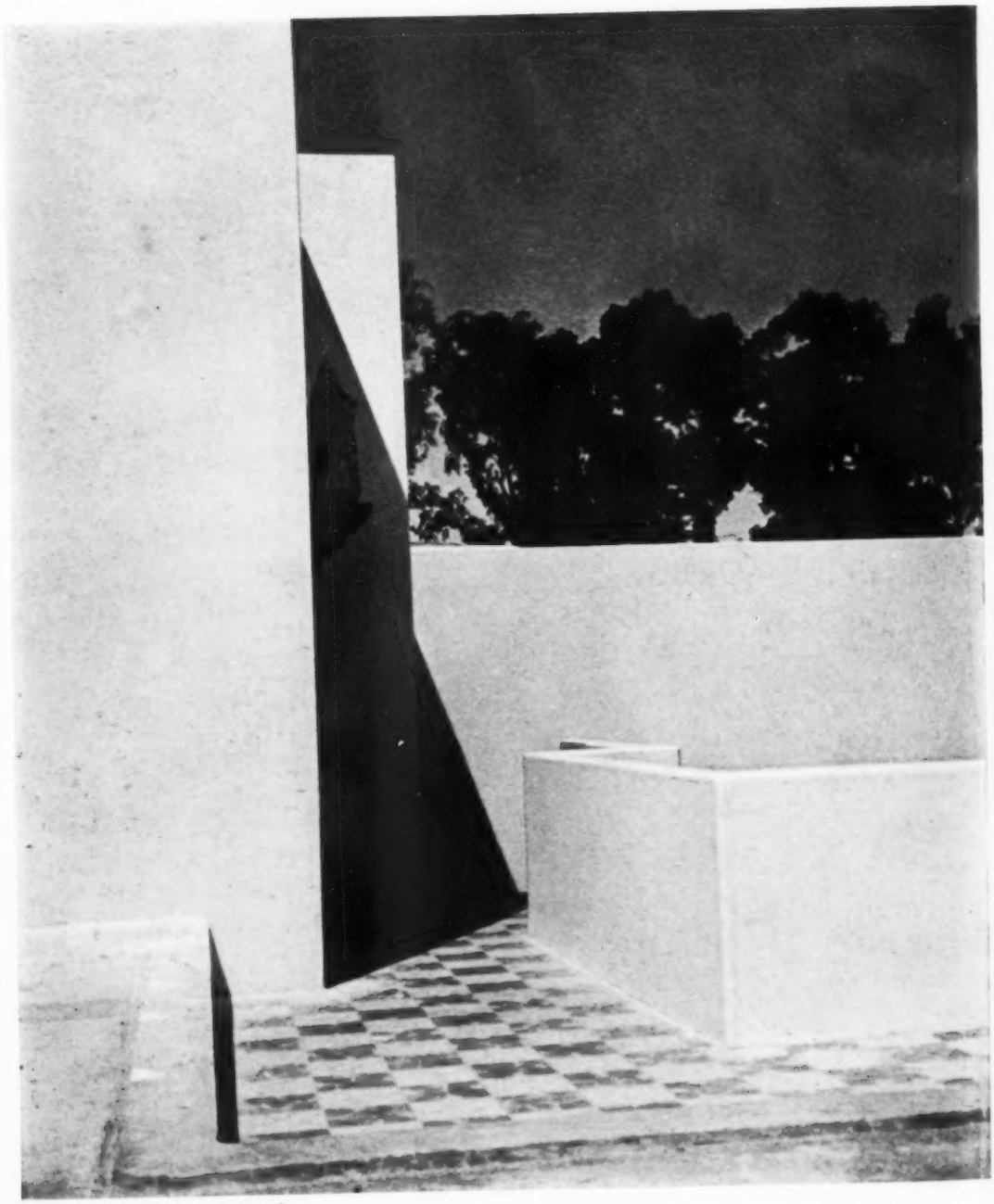
REMODELED HOUSE AT GUADALAJARA, MEXICO
LUIS BARRAGAN, ARCHITECT
JUAN PALOMAR, ENGINEER





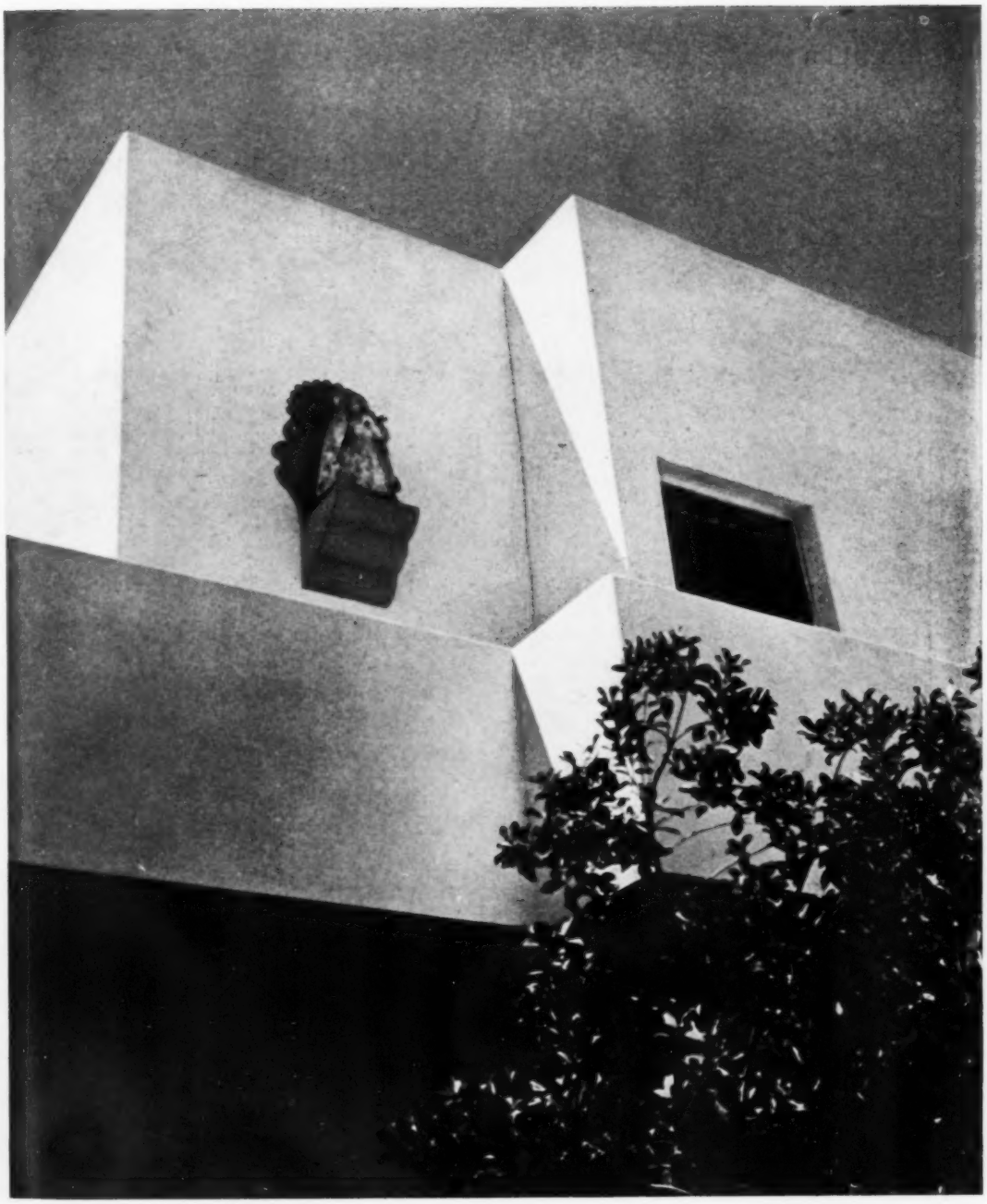


Photographs by R. Salcedo Magaña



Photographs by R. Salcedo Magaña

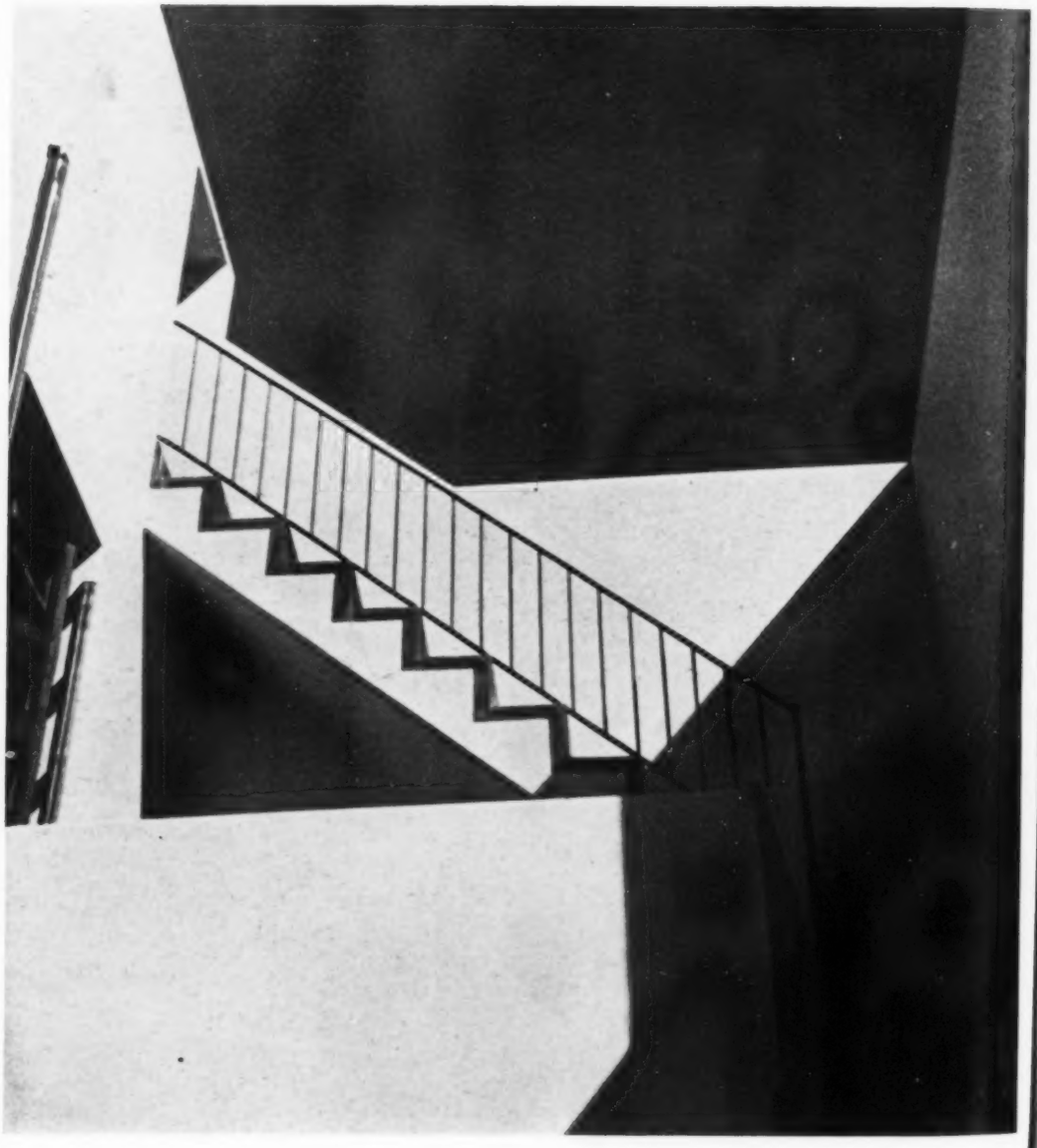
REMODELED HOUSE AT GUADALAJARA

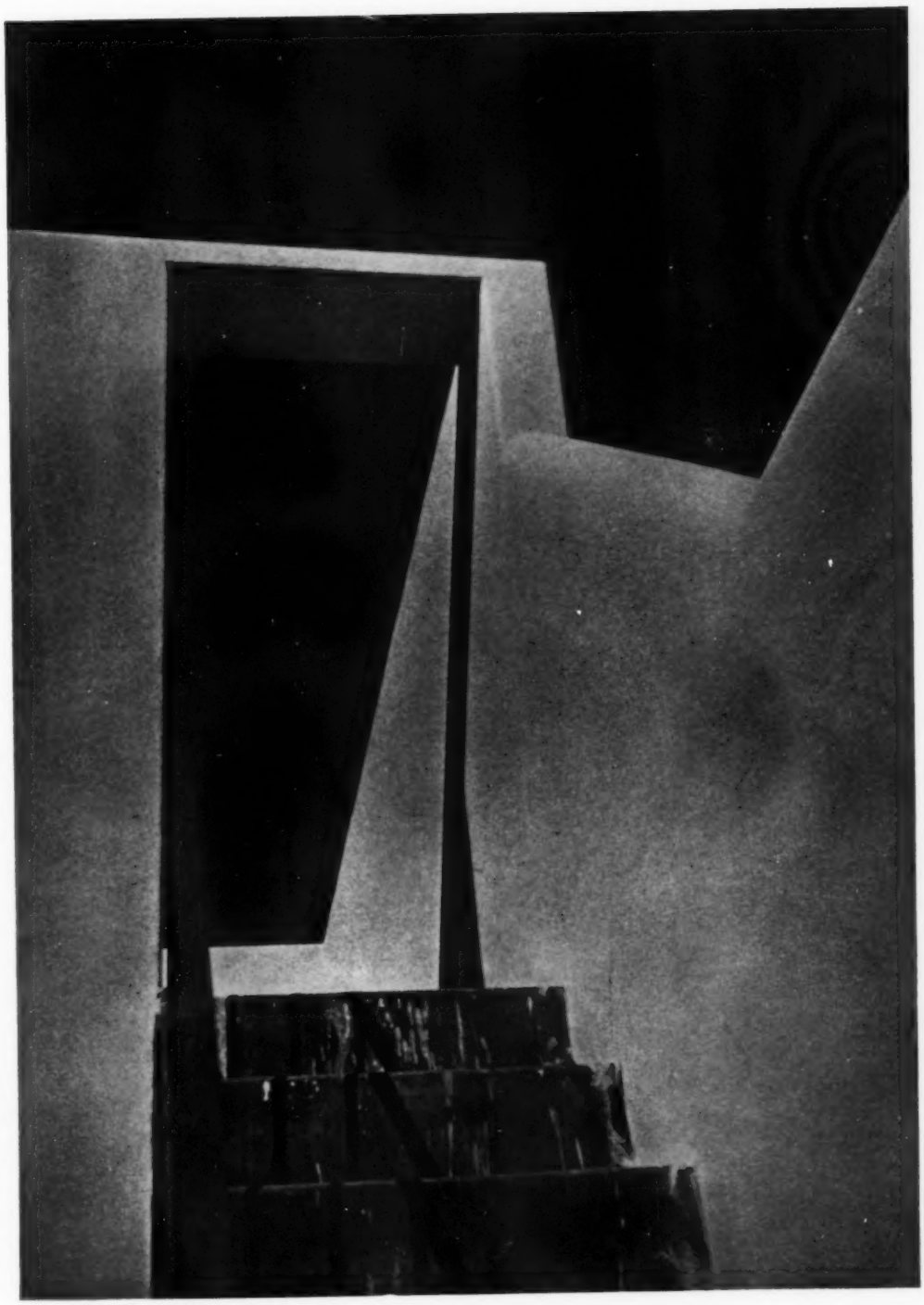


LUIS BARRAGAN, ARCHITECT

HOUSE OF MRS. HARPPER de GARIBI AT GUADALAJARA

LUIS BARRAGAN, ARCHITECT
RAMON HERMONSILLO, ENGINEER

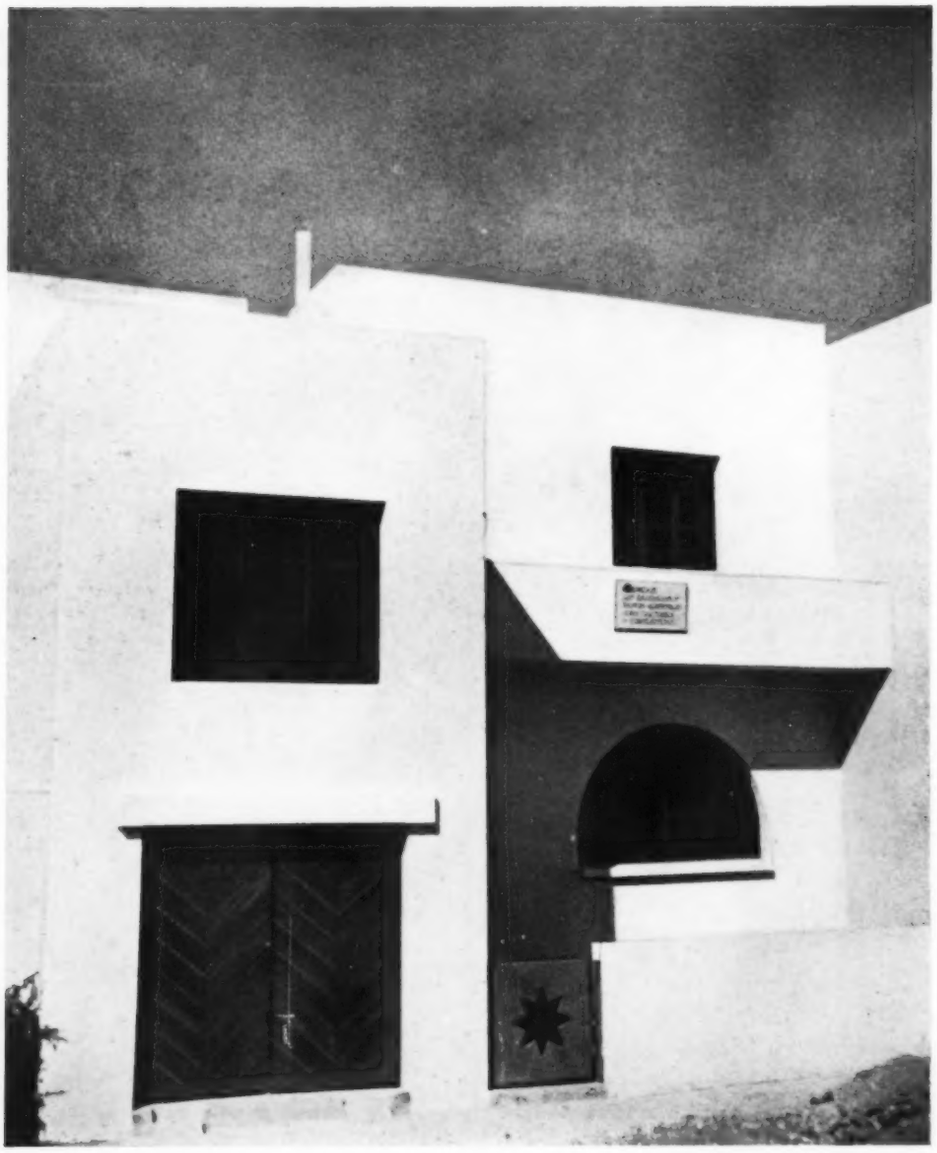


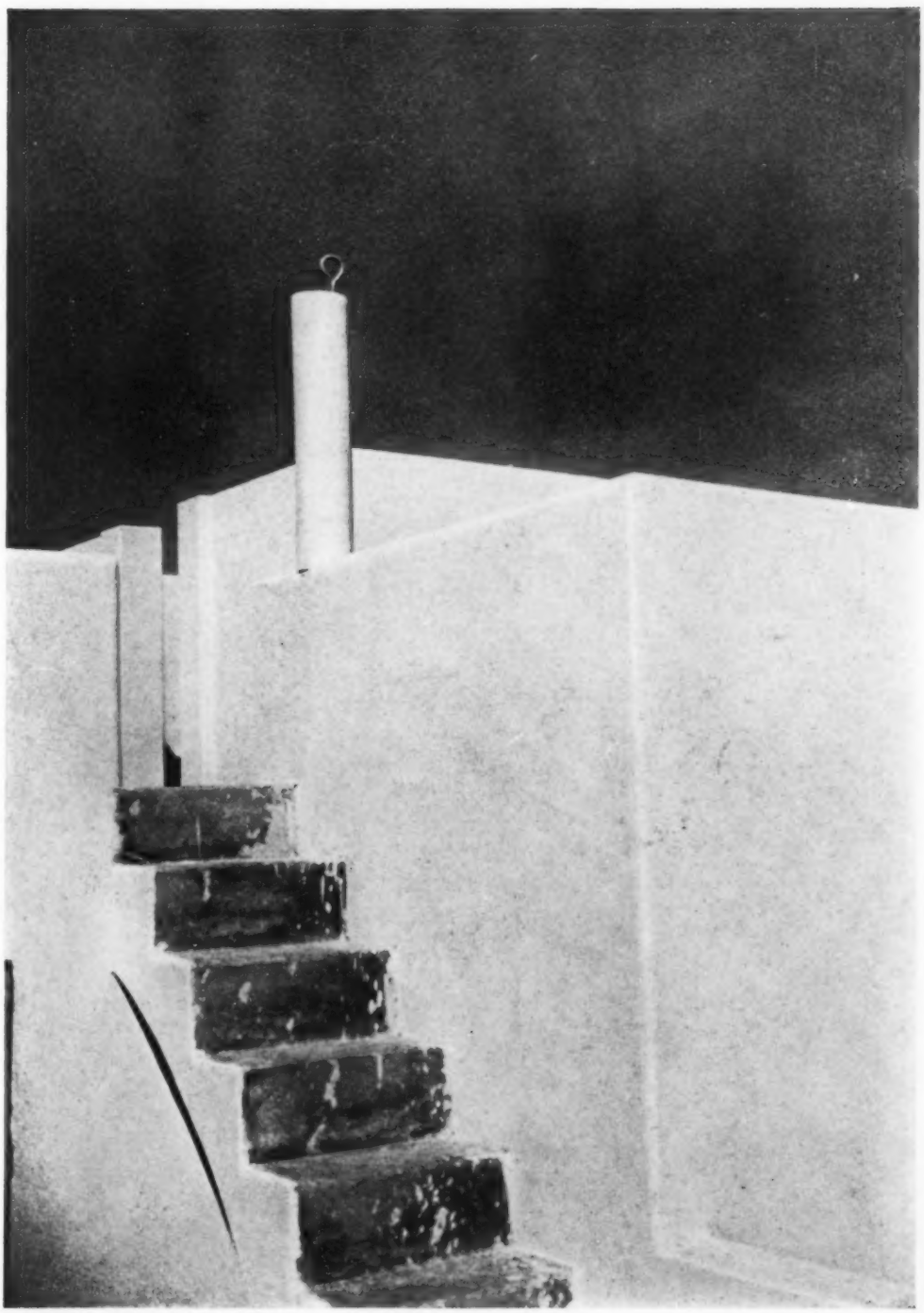


Photographs by R. Salcedo Mañaña

HOUSE OF LIE. E. ROBLES LEON AT GUADALAJARA

LUIS BARRAGAN, ARCHITECT
RAMON HERMONSILLO, ENGINEER

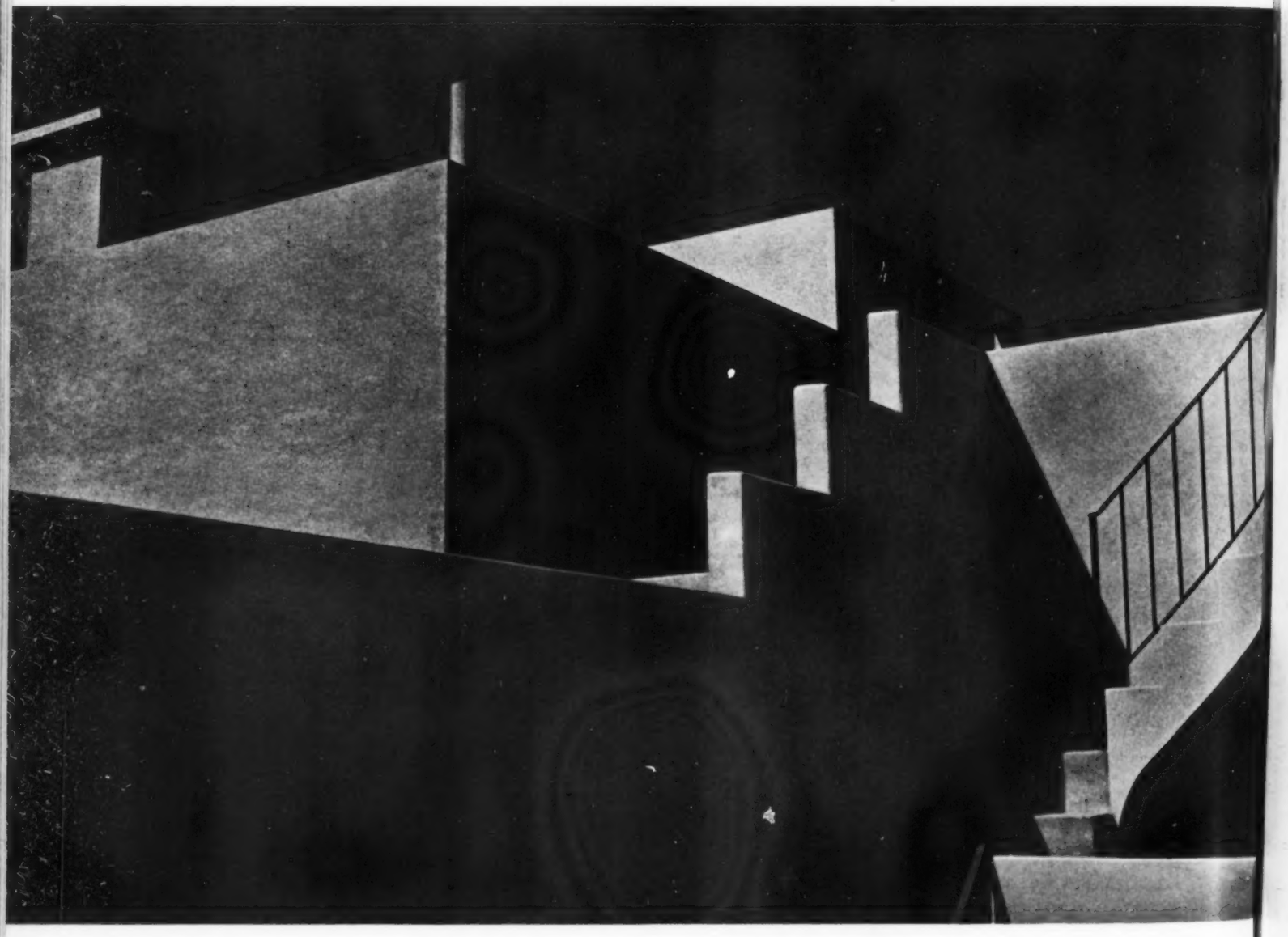


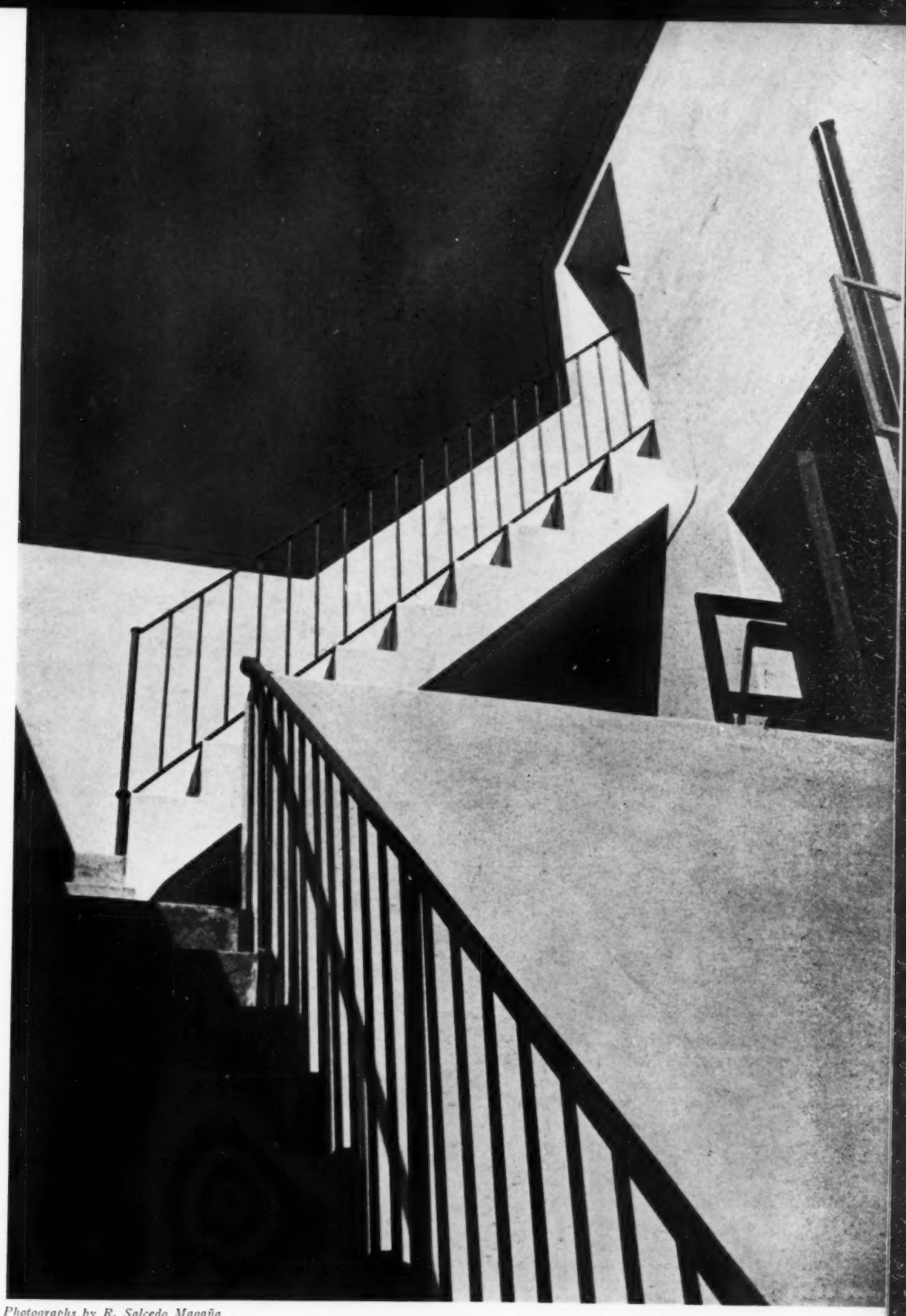


Photographs by R. Salcedo Magaña

HOUSE OF LIE. E. ROBLES LEON, GUADALAJARA

LUIS BARRAGAN, ARCHITECT





Photographs by R. Salcedo Magaña

Photograph by R. Salcedo Magaña

HOUSE OF LIE. E. ROBLES LEON—LUIS BARRAGAN, ARCHITECT

THE ARCHITECT IN THE HOME

A TRUE TALE OF LABOR AMONG THE LOVED ONES

BY GEORGE S. CHAPPELL

I met my old friend and fellow-architect, Horace Bradford, on the street the other day. I was both shocked and surprised at his haggard appearance, particularly as I had heard, within the fairly recent past, that he had been busy with a real job, news of which had spread like wildfire through our fraternity, being greeted with loud cries of "The lucky bum!," "How does he get that way!," et cetera.

And yet, as I say, in spite of his good fortune my friend's expression was so woebegone that when he suggested lunching together I hesitated. However, having no excuse ready I felt myself caught. There was, moreover, an unspoken but poignant appeal in his eyes. I sensed that his heart was charged with a heavy burden which he felt that some one must share. With a slight sinking sensation I murmured my assent and we were soon seated at a quiet table in a near-by restaurant. There, over our coffee, Bradford unfolded his tragic tale.

"Yes, yes," he said in reply to a casual remark of mine, "I have had a job but for the love of Mike don't congratulate me or I shall break down. I'm so fed up on congratulations that I couldn't stand another one."

Noting my tactful silence and recipient expression he proceeded rapidly. "It was a good job, too—a big house up in Connecticut. I wasn't bothered with financial difficulties. There was plenty of money and my clients throughout were amiability itself. There was no trouble about anything so far as they were concerned. In fact, in many ways, as you can see, the set-up was ideal. And yet it has almost killed me. Let me make myself clear. I did the job alone . . . *and I did it at home.*"

Bradford paused solemnly to let these words sink in before continuing.

"I don't know, George, whether you have ever tried working at home but if you haven't, let me warn you . . . don't. You remember my office in the old days, don't you? It was small but about as convenient a joint as I can imagine, with a place for everything. I had a nice reception room, a small private office with a big desk, and space in the drafting room for three tables with all the necessary filing cases for correspondence, racks for plans, drawers for instruments, bookshelves, cubby-holes. . . Gee whiz!"—he heaved a long sigh—"how little I appreciated them!"

"Of course I'm not kicking because I had to give up the place. A lot of guys have been in the same boat and when I stored my furniture and carted the absolutely necessary stuff out to the country—a table and board, my typewriter, tracing paper and so on—I thought I was darn lucky to get rid of the overhead. But trouble met me practically on the doorstep. When my wife saw what I was unloading from the car she said, 'Where do you think all that is going?' You know how helpful wives can be at times? I hastily assured her that everything was going to be all right and finally got my junk installed in a third-floor bedroom that used to be used for maids when we had such things, and that was that.

"I didn't go into the room for some time after that because I had nothing to do. Then this job came along, 'way last fall, and I started the home-office going. It

worked pretty well at first. It was good to get back to the old drawing-board and I sang merrily at my work. This was while I was making the sketches, at eighth scale. They didn't take up much room and every evening I tidied up the table, laid the drawings neatly under a T-square and left the room looking ship-shape. But O, boy! when I hiked her up to quarter-scale, what a change!

"I'd forgotten how much room drawings can take, particularly if you never get rid of any. A lot of them were studies, tossed aside in the fine frenzy of creation as soon as they were finished. In the old days a boy or a charwoman or some one gathered up this sort of thing, but no more. At the end of a week I was up to my neck in tracing paper. The bed, which was still in the room, was covered with a two-foot drift. Over in one corner was an iron washstand on and under which I kept my stationery and ever so often I had to dig my way over to it.

"In the general confusion I discovered that everything I particularly wanted promptly got lost. If I turned away from my triangle for the fraction of a second it disappeared. Drawings that were urgently needed rolled themselves up and sneaked into the middle of the pile or, somehow or other, got inside of other drawings. My T-square developed an uncanny way of sliding back of things and my dividers simply walked off by themselves. They *must* have. It didn't help much when my wife, who heard me cursing, looked in the door and said, 'Good heavens, how can you work in such a mess!'

"In order to keep her out of the room I began making daily trips to the cellar carrying armfuls of discarded material. I knew that if I didn't do this she would sneak in and tidy up on me.

"Often I was alone in the house, the wife having gone to do her daily marketing or what not. Do you know what being alone in a house does to you? It makes you cuckoo. I found I was getting so terribly aware of things that it was actually painful. The telephone . . . or was it the doorbell? . . . would ring and automatically I would sprint for the stairs. Usually it would be the Fuller brush man or an old lady selling soap or, worst of all, some cackling female acquaintance who would say gaily, 'My, aren't you lucky not to have to go to work!' I got so jumpy and alert that I sprang to attention when any bell within half a mile rang and if a kid went by on a bicycle I used to rush down and open the front door.

"All this while, mark you, the job was getting more complicated and the drawings more unwieldy. The contract was let and I had to keep up with the builder. That meant details and O man! did I find out how much I'd forgotten! . . . how much, in fact, I'd never known. For a week I struggled with a chimney detail in which the flues apparently passed through each other or burst into the fireplaces above. All my formulas for flue sizes and throat openings vanished into thin air and I had to spend long hours weeding out the data.

"Submitting my details to the contractor was an agony. I used to watch him carefully to see if he'd burst out laughing but, bless his great human heart, he never did. Sometimes he looked puzzled, staring at the drawing, and then he'd say, 'I think I see what you mean,' . . . which was certainly letting me down easy. And he built the job perfectly. Everything worked like a charm. The chimneys drew, the stairs landed where they were supposed to, the windows opened and shut . . . it was wonderful! God's gift to architects is a good contractor, I say.

"However, my home troubles weren't over, not by a jugful. As winter came on my third-floor room became uninhabitable. I began to realize why maids, in the past, had been so fleeting. Out of the one small register, which was on the north wall, of course, came the cold breath of an ice-box, this in spite of the furnace stoking that filled my leisure moments. The wind blew through the windows as if they weren't there. Even my faithful dog, who used to bury himself under a pile of tracings, deserted me, shivering as he went and looking back reproachfully.

"Perforce I worked my way downward through our establishment, fighting my way, until at last I had our living room in complete disarray and my wife and family in hysterical revolt. The fact that I spent an hour every afternoon trying to clean up was totally unappreciated. '*Look* at this room!' my wife would shriek. I thought it looked very nice. My tracings, tucked in over the tops of the books made a rather neat effect and the T-squares went very well with the fire irons. In spite of which I was a reproach.

"The climax came when my daughter's favorite suitor, whose attentions I had consistently encouraged, sat down not on one but on *three* thumbtacks, which is some sort of a record, isn't it? I know it was the end of a beautiful friendship.

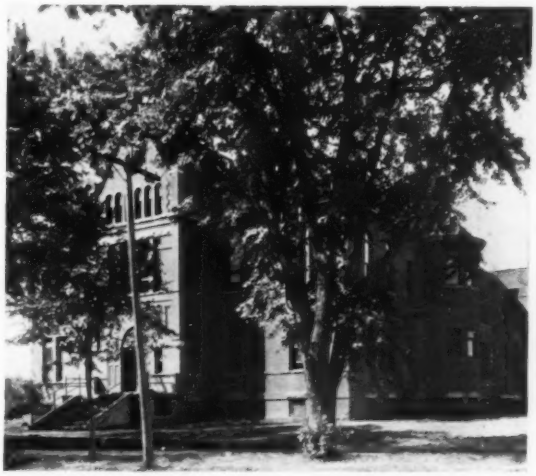
"Well, I finally muddled through, battling every inch of the way. The house was finished and my tools of trade were stowed away. Peace was restored. But now, George. . . " Bradford's voice broke and his hand trembled as he nervously fussed with his coffee cup . . . "I am faced with a terrible ordeal. I have just got another job . . . and we have moved into an apartment! Isn't it horrible!"

MODERNIZING THE SIOUX CITY SCHOOLS

A MODERNIZATION PROGRAM UNDERTAKEN AS A FEDERAL PUBLIC WORKS PROJECT

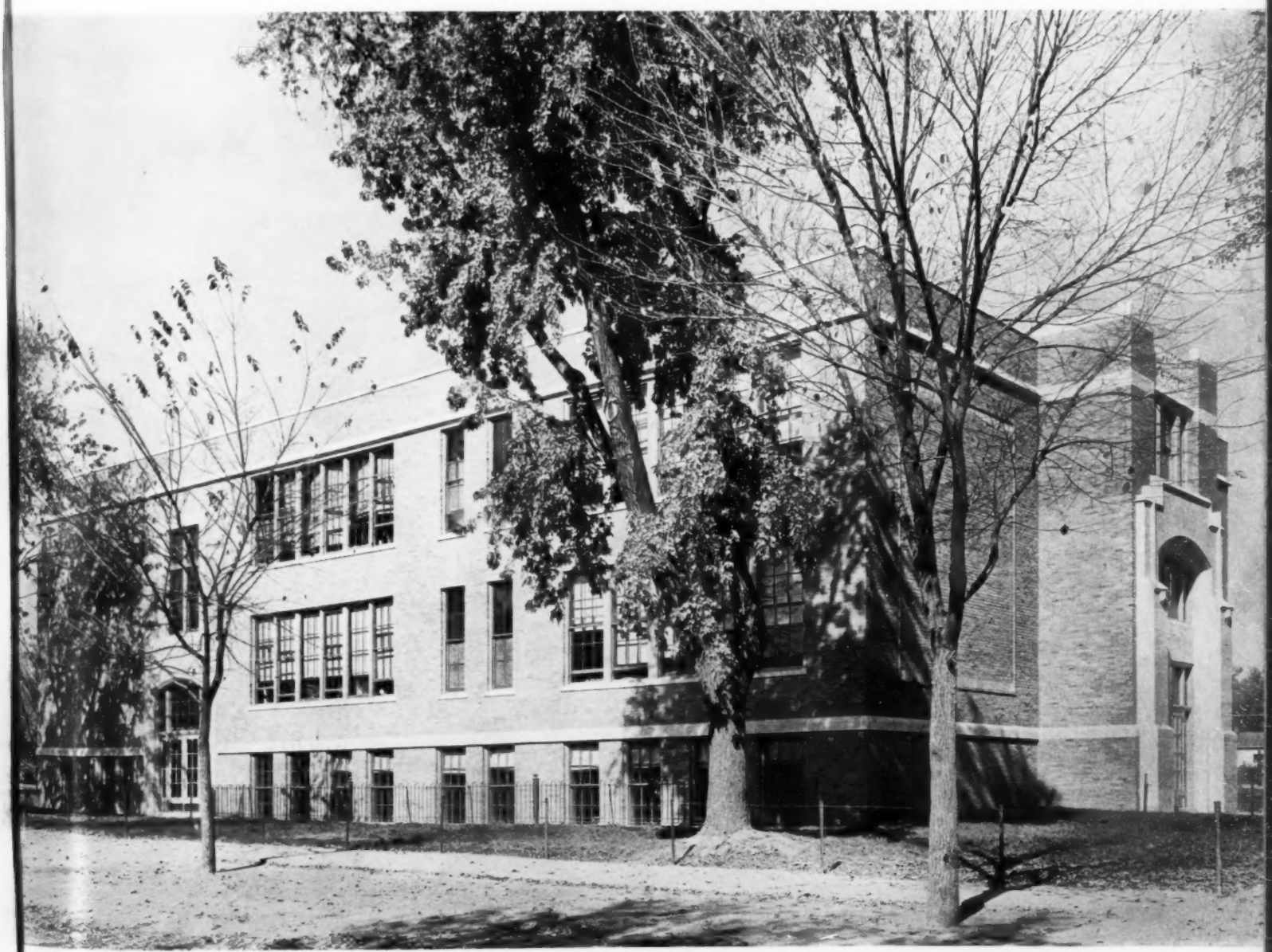
BEUTTLER & ARNOLD
SUPERVISING ARCHITECTS

GEORGE B. HILGERS
PAUL R. RUDOLPH
ASSOCIATE ARCHITECTS



ORIGINAL BUILDING: 1891

HAWTHORNE SCHOOL (REMODELED)



Photographs by N. N. Woodworth

ORIGINAL BUILDING: 1888

BEUTTLER & ARNOLD
SUPERVISING ARCHITECTS

WILLIAM A. JENKINSON
ASSOCIATE ARCHITECT

BANCROFT SCHOOL (NEW BUILDING REPLACING OLD)

Photographs by N. N. Woodworth

MODERNIZING THE SIOUX CITY SCHOOLS

By RALPH ARNOLD

The Sioux City Board of Education, through a policy adopted several years ago, has been carrying forward a program of modernizing public school buildings. Thirteen projects were completed during the years 1927 to 1933 under this initial program.

Following the organization of the Federal Administration of Public Works, a survey was made by Beuttler and Arnold, architects, for the Sioux City Board of Education, and application then was made to the Federal Administration for a 70% loan and 30% grant totaling approximately $550,000 to modernize and improve thirteen more of the remaining public school buildings. The application was accompanied by sketches and estimates of cost and recited the physical changes to be made and the advantages to be gained in each project.

The application was granted. School district bonds to the amount of $390,000 were issued, but inasmuch as other interests were willing to purchase at a lower interest rate than the 4% offered by the government, the bonds were sold privately and the application was revised to consist of a request only for a grant of approximately 30% of the building cost which was approved by the Administration.

TYPES OF PROJECTS

It was necessary to group the projects in two groups: (1) those consisting largely of additions to existing buildings and of such a nature that they could be begun and carried on without interfering with regular school activities; (2) those in which it would be necessary to vacate completely buildings during the period of construction. Construction contracts for group one were awarded as early as April 1, 1934, with the privilege of starting work immediately and with completion date of July 15, 1934. Construction contracts for group two were awarded prior to June 1, but with the restriction that actual construction work should not begin until after the closing of the school year, June 8, and with completion date of August 25, 1934. With the exception of minor items not materially interfering with school activities, the contracts were completed on time and active school work began in all of these buildings on the school schedule, September 4.

The thirteen projects may be further subdivided into the following: one entirely new building replacing one antiquated structure; five major complete remodeling and modernizing projects; five minor projects of remodeling and modernizing; two projects consisting of fireproof additions to existing modern buildings.

NATURE OF ALTERATIONS

The major group included buildings of ancient construction and design. The arrangements of these old buildings were studied and new plans developed with the following considerations in mind:

Location, type of residential district, need for permanent school, probable enrollment decreases owing to encroachment of business area, or probable increases by virtue of nearby undeveloped housing areas were analyzed.

Size and age of building, physical condition and general adaptability of plan to a successful rearrangement were ascertained.

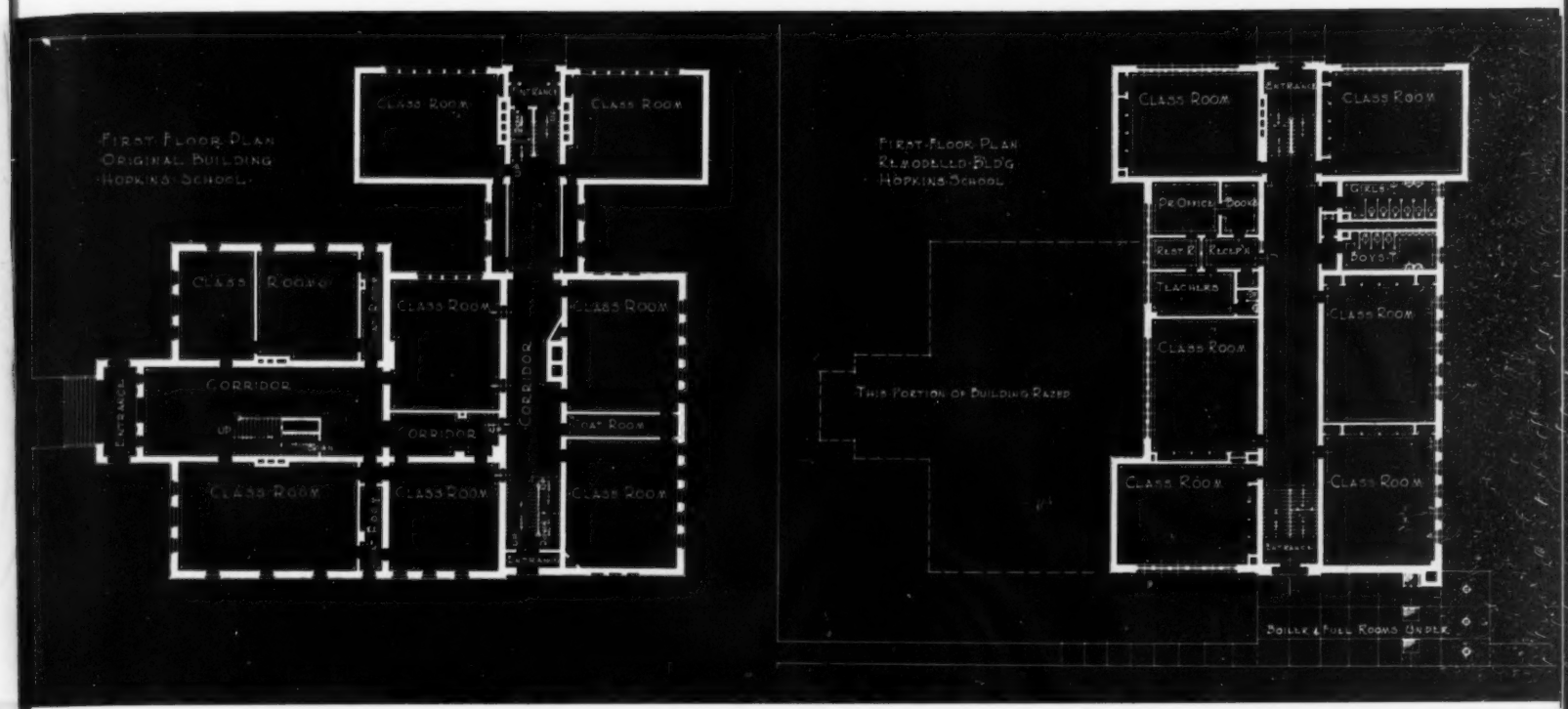
Old sloping type roofs supported by ancient wooden trusses, were removed; these were covered in most cases by wooden shingles, and having projecting type gutters with exterior downspouts, all in a bad state of repair and expensive to maintain. The new flat roofs were covered with pitch and gravel roofing, with proper fall to new inside wrought-iron downspouts, run to basement and connected to storm water sewers under ground. Exterior parapet walls were extended and new flashings installed, replacing old cornices and gutters.

Exterior brick facings of inferior soft brick laid in old lime mortar were removed and new vitrified face brick laid in cement lime mortar placed on the exterior walls and properly bonded with rows of blind headers. The old walls were carefully gone over and all defective brickwork replaced or repaired. During the process of refacing, the relocation of window and door openings was a simple matter.

ORIGINAL BUILDING: 1887

HOPKINS SCHOOL (REMODELED)

Photographs by N. N. Woodworth



BEUTTLER AND ARNOLD, ARCHITECTS

The administrative needs of each building were considered and principals' offices, teachers' rooms, restrooms, and the like, provided, filling requirements that had been entirely neglected in most of the original building plans.

Where a building was so constructed that the ground floor had ceilings of satisfactory height, and could be properly lighted and ventilated, it was possible in several cases to finish some desirable rooms for instruction purposes that would otherwise have been waste spaces. In most of the projects, one to four rooms have been gained by this method.

Day-lighting in the older buildings was contrary to contemporary standards, both as to quantity and location. This deficiency was corrected by closing all windows in the end walls of corner rooms and installing new windows properly located.

The old foul-smelling, poorly ventilated, poorly lighted toilets, located in some far corner of the basement, were abandoned. Modern light and mechanically ventilated toilets were installed on each floor for boys and girls, and private toilets were provided adjoining the kindergarten rooms for the use of smaller children, and also in connection with the restrooms, and administrative offices.

Mechanical ventilation was provided for all classrooms and toilets. In some instances entirely new systems were installed, owing to the obsolescence of the existing system or to the lack of any system at all. Air filters were provided in connection with the ventilating systems.

Wood studding, lath and plaster partitions surrounding all corridors and stair halls were removed and replaced with solid brick-bearing walls, placed on concrete footings. Wood floors in corridors and wood stairs were removed and replaced with reinforced concrete construction and terrazzo finish. Woodwork was refinished, and walls and ceilings repainted throughout the buildings. Soft wood floors in classrooms were removed and replaced with hard maple finish flooring.

Old plastering that was loose or in bad condition was removed and replaced with plaster on metal lath, or by fire-resisting composition board. Antiquated plumbing fixtures were removed and replaced with modern fixtures.

Heating plants and fuel storage rooms located in basements, and directly beneath combustible floors, were removed and placed in fireproof rooms outside the building lines and below grade so as to expedite the handling of fuel and to remove this fire hazard from inside the building.

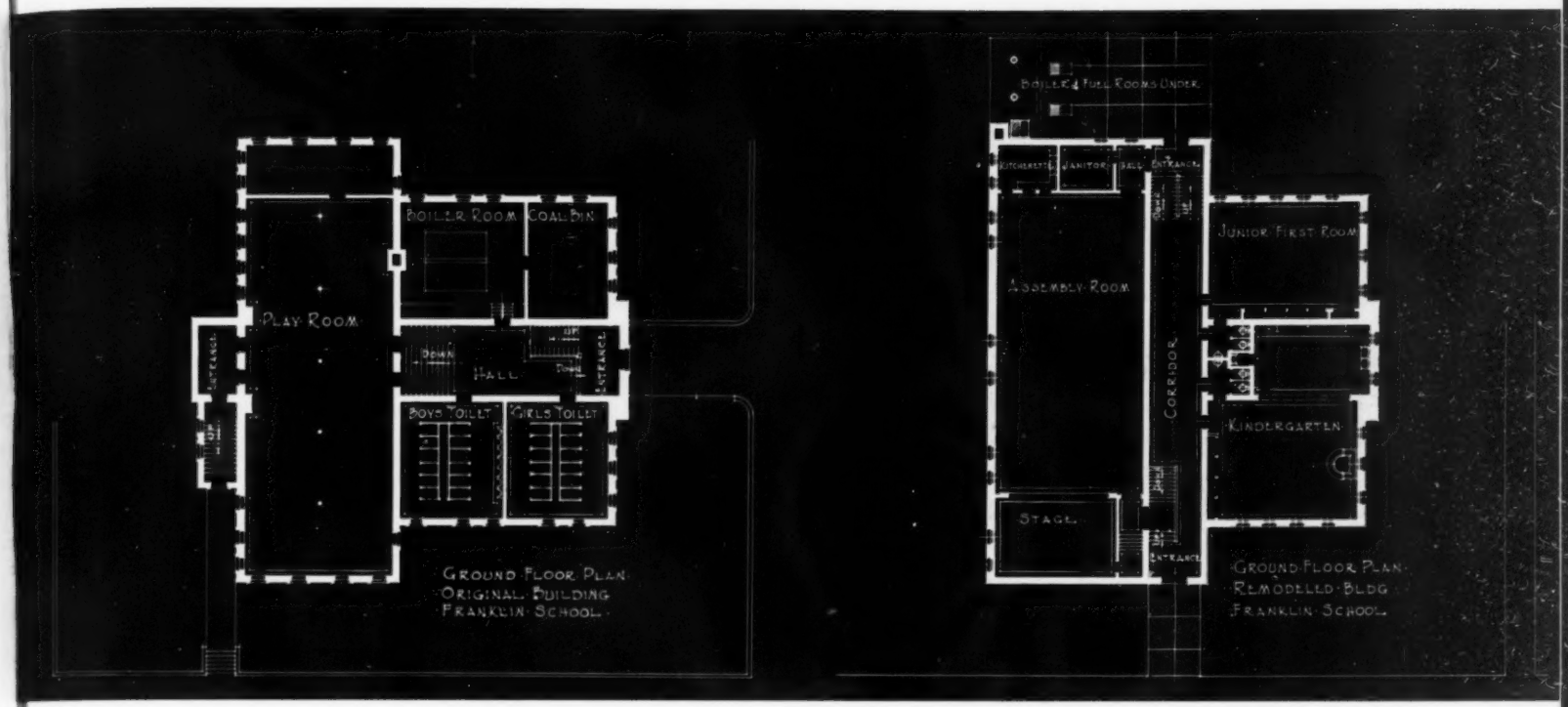
Inefficient heating plants were rebuilt and repaired, and when the boilers were in bad condition, because of old age, or were inadequate, they were replaced with new equipment. All boiler plants were equipped with automatic coal-burning machines best adapted to the requirements.

The old knob and tube wiring was replaced with new wiring in conduit or in metal-covered cable. Rooms having only one or two outlets were given from four to six outlets for lighting, and extra convenience outlets. Concealed aerial wires were installed with out-

ORIGINAL BUILDING: 1887

FRANKLIN SCHOOL (REMODELED)

Photographs by N. N. Woodworth



BEUTTLER & ARNOLD, ARCHITECTS

lets for radio plug-ins for each room. Electric clocks were provided in classrooms and offices.

Partitions were relocated where advisable to provide better corridor lines and better room sizes. In many instances the old-style coatrooms were replaced with the more modern, more easily supervised and compact wardrobes in each room.

Ceiling surfaces in all accessible attic spaces were insulated with the equivalent of 2 pounds of rock wool per square foot.

Exterior windows were repaired where necessary, and the large lights of glass divided to produce stronger sash with a greater reduction in the usual breakage loss.

Where entrances were approached by exterior steps, these steps were removed, the entrances brought down to grade level, and the stairways rearranged on the interior, thus reducing the risk of accidents and effecting easier maintenance.

In practically every building, because of utilization of otherwise wasted space, it has been possible to provide a room for community meeting purposes, and school assemblies adequate in size for the individual buildings.

Grounds are being landscaped with planting areas and playground areas defined and fenced.

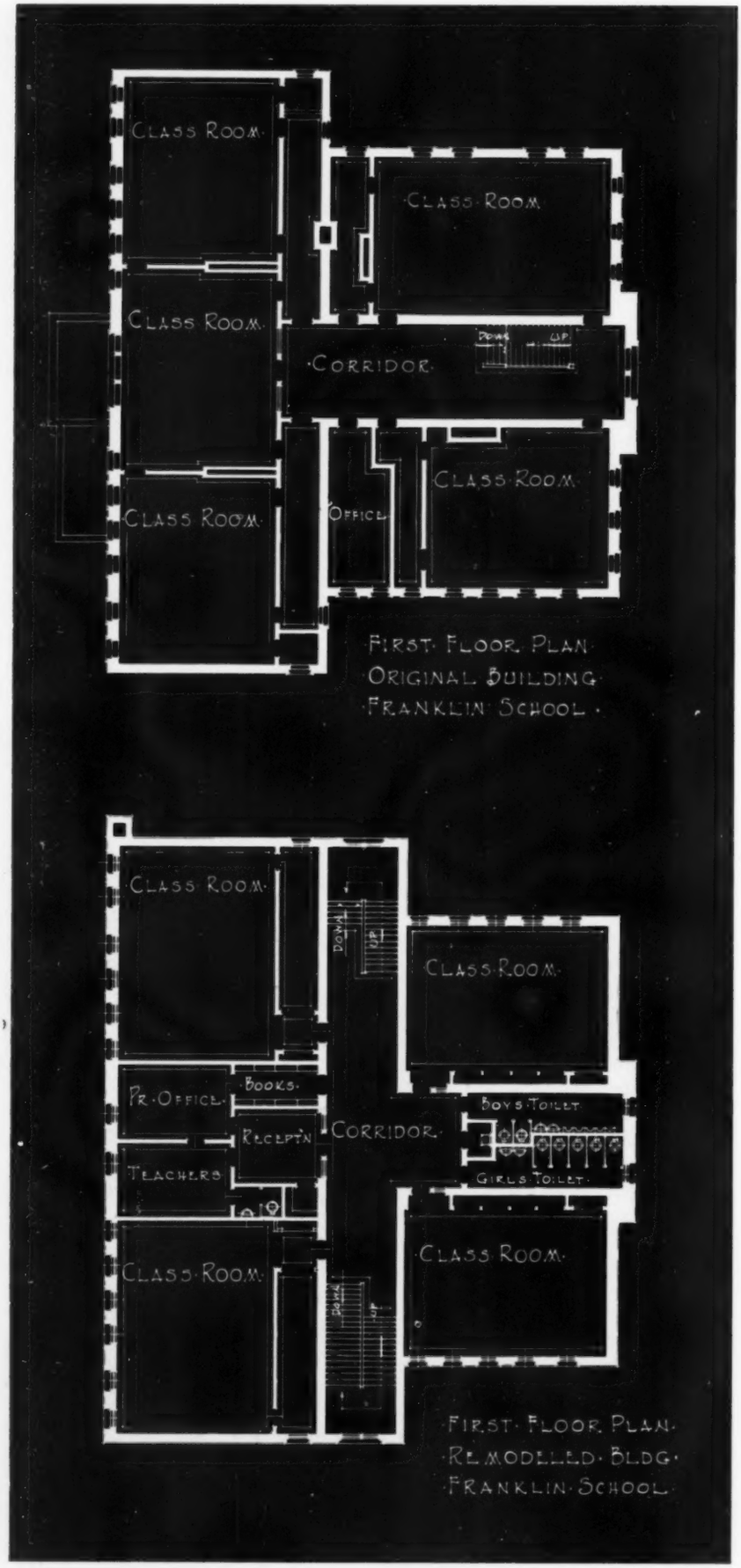
Through the reduced fire hazards, removal of heating plants and fuel storage from the buildings, removal of woodtruss roofs and shingle roof covering, new electric wiring and revamped ventilating systems, the insurance rates have been materially reduced. In some cases as much as 30% reduction was effected.

Through improvements in construction, the life of the buildings has materially increased. These 40 to 45 year-old buildings are believed to have an additional period of 30 to 40 years of safe and efficient usefulness. By interior rearrangements, additional classrooms are gained to increase the pupil capacity considerably.

COSTS

Because of the varied building types and their special and individual requirements, it is difficult to give figures as to cost other than to state that in the case of projects in which the maximum amount of work was done, the expense was approximately from one half to two thirds the cost of a new building of the same type. However, it would have been difficult, and in this particular case impossible, to have financed this amount of totally new construction. Likewise, it would have been impossible to have built totally new buildings on the sites of the old buildings within the limit of less than three months.

As a public works project, the principal function was to provide employment for labor and to make a market for materials produced by labor. Naturally, there are no figures available as to the amount of labor entering into the production and fabrication of materials before delivery at the building sites. However, 213,000 man hours of labor were provided at the building sites and of the total cost of approximately $550,000, $172,000 was paid to labor employed directly on the building construction.



BEUTTLER AND ARNOLD, ARCHITECTS

PLAN BEFORE ALTERATION

PLAN AFTER ALTERATION

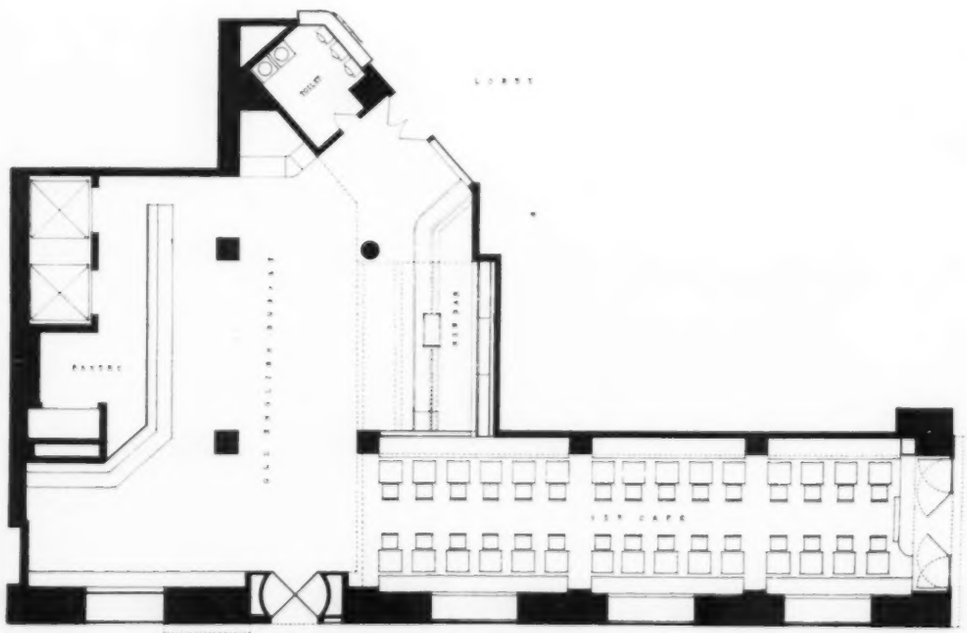
REMODELED BEDROOM FOR CLARENCE J. SHEARN NEW YORK CITY

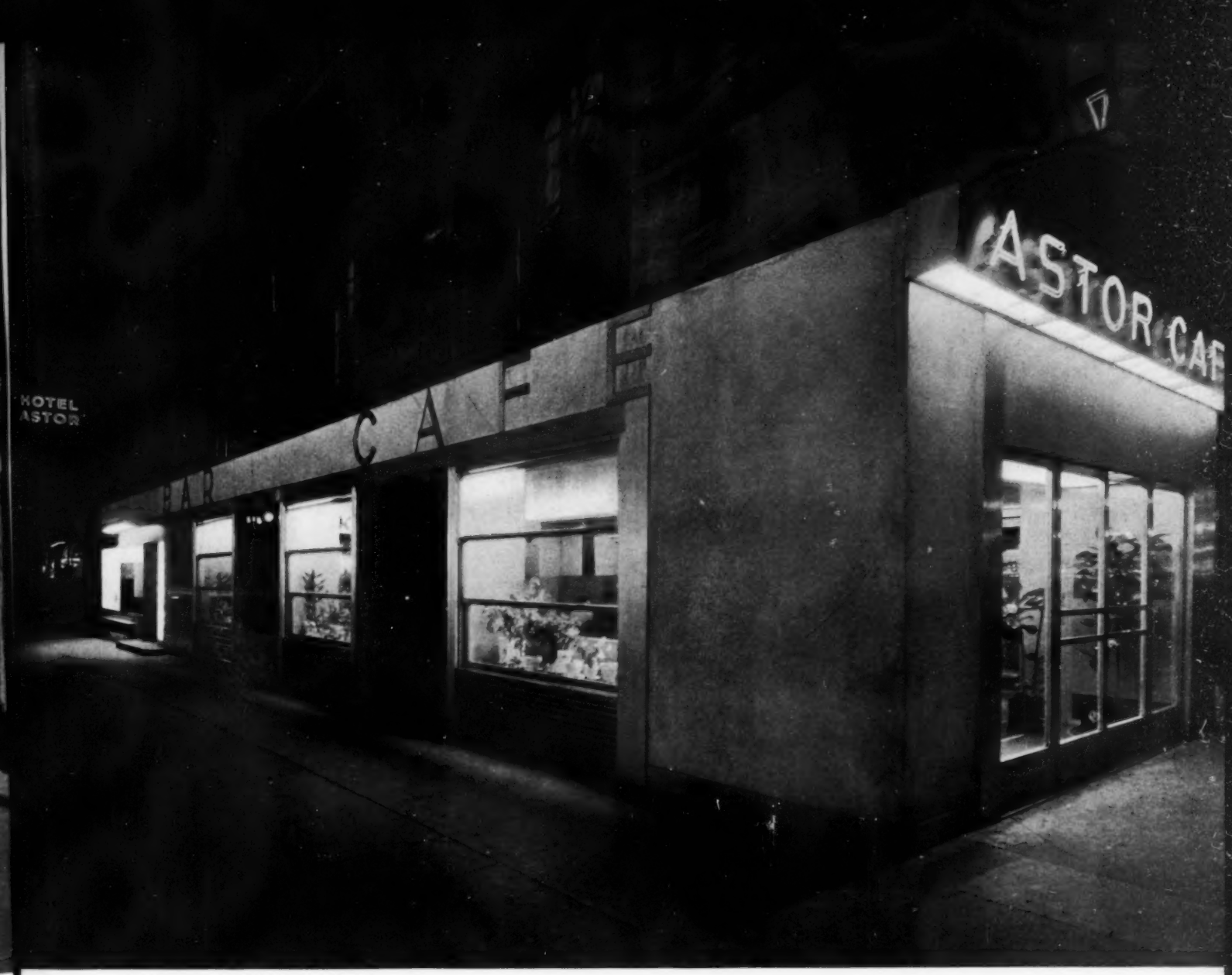
ELEANOR LEMAIRE, DESIGNER

Wall treatment: yellow, white and gray; upper wall painted gray to reduce ceiling height. Soffet of niche: deep blue. Door: vermilion and gun metal lacquer. Paneled wall of niche: prima vera; narrow horizontal lines, gun metal lacquer. Bookcase: vermilion line. Carpet: light blue and dark blue. Over draperies: gray, white embroidered bands. Under curtains: light red. Bed and writing desk: gray and yellow lacquer. Wardrobe: gun metal lacquer. Slipper chair: greige. Day bed: prima vera lacquer, blue upholstery

Photograph by F. S. Lincoln

Photographs by F. S. Lincoln





ASTOR CAFE IN HOTEL ASTOR, NEW YORK CITY

WILLIAM MUSCHENHEIM, ARCHITECT

PEABODY, WILSON AND BROWN

ASSOCIATE ARCHITECTS

MODERNIZING THE STONELEIGH COURT

Corridor in front of office and reception rooms on lobby floor before alterations

Stoneleigh Court Apartments, an eight-story-and-basement fireproof, brick, stone and concrete and steel building, was built in 1903, and at that time was considered one of the best equipped apartment houses in Washington. Its site, at the southeast corner of Connecticut Avenue and L Streets, Northwest, then an exclusive residential section, is now a high-class shopping district. Within easy walking distance are the main downtown shopping and financial districts, as well as the theaters and Government buildings; within three squares is the White House.

As may be noted on the accompanying plans, the building consisted mainly of large apartment units, the demand for which gradually slackened until it became difficult to rent any of the apartments. In addition, the finish and mechanical equipment of the building were in extremely bad condition when the present owners (The Metropolitan Life Insurance Co.) came into possession slightly more than a year ago. It was

Left:

The new lounge which replaces the old reception rooms.

Right:

A typical new living room.

Photograph by Frances Benjamin Johnston

JARRETT C. WHITE
ARCHITECT

APARTMENTS IN WASHINGTON, D. C.

decided to divide the building into smaller apartments, to cut through the public corridor so that all sections of all floors would be connected, to install new mechanical equipment and a new lobby and office on the ground floor.

The James Baird Company, Inc., of New York and Washington were general contractors for the work which was started in January, 1933. Completion was delayed until this time because of labor strikes which retarded the construction by approximately three months.

As an experiment, it was decided to remodel the middle section of the building, i.e. that section of the building included in the dotted line on the plan marked "B." This consisted of taking four old apartments on each floor and converting them into seven, making a total of forty-nine apartments, where there had formerly been twenty-eight; also, installing a connecting corridor through this portion, a new lobby on the ground floor, and new mechanical work in this section. The elevators in this as well as in the other sections were completely modernized, and a new roof was installed over the entire building.

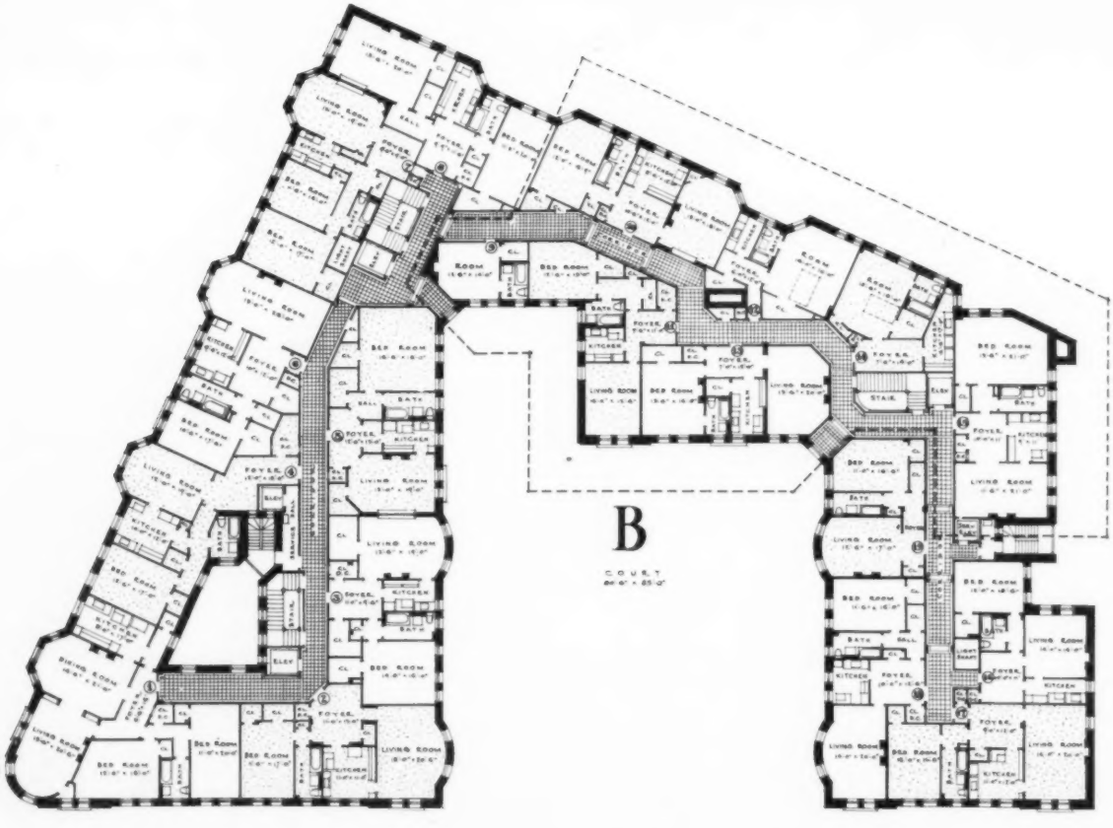
The heating boilers were in good condition, but a new hot-water heating system was installed with a new steel boiler, stoker, and new tanks and converters. All plumbing lines and electrical wiring throughout the remodeled section were removed, and new seamless brass tubing was installed for all hot and cold-water lines. New electrical wiring was installed, together with a radio antenna system with outlets in each apartment. All new bathrooms have tile floors and "Arco" steel panels with tub and lavatory units. Speakman "Si-flo" closets with Speakman flush valves. The new plumbing fixtures were supplied by the Standard Sanitary Manufacturing Company.

As far as possible the old radiators were reused, but where new radiators were installed, the cast-iron con-

THE STONELEIGH COURT APARTMENTS IN WASHINGTON D. C.

JARRETT C. WHITE, ARCHITECT

PLAN BEFORE ALTERATIONS



PLAN AFTER ALTERATIONS

Photograph by Frances Benjamin Johnston

A TYPICAL BEDROOM

vection type was used, and all radiators, both old and new, were covered with inclosures.

All kitchens are equipped with ventilating fans, insulated-oven gas stoves, and General Electric refrigerators, as well as acid-proof, double drainboard, enameled-iron sinks. The small efficiency type kitchen has cabinet-size sinks of the same material. It also has a small gas stove and ice box.

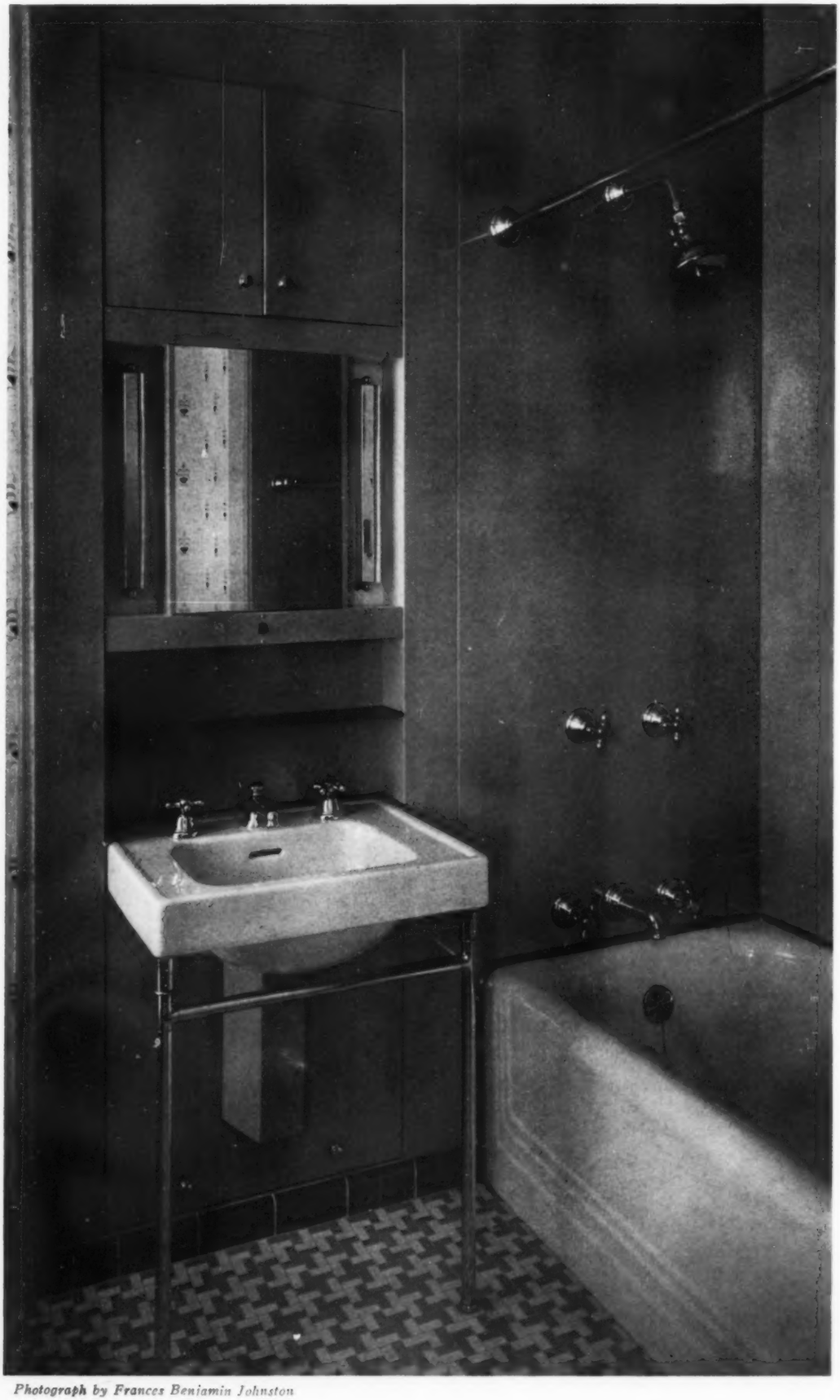
All windows in all rooms in all apartments, as well as the windows in the public hall, were fitted with venetian blinds and extruded aluminum fly screens.

The public halls and the entire public space on the first floor have been carpeted. The walls of all living rooms, bedrooms, bathrooms and foyers have been covered with washable and sun-fast wall paper, no two rooms having the same color or pattern; all papers were supplied by the Imperial Wall Paper Company. All lighting fixtures were supplied by the Chase Brass and Copper Company. Telephones in all apartments are hand-set phones installed in flush cabinets in the wall.

The new lobby is paneled from floor to ceiling in genuine American walnut selected for vertical grain. The structural columns in the lobby were faced with fluted, extruded bronze. The mirrors are gold-plated and are indirectly lighted from the top behind the draperies. This room, as well as the small lobby front of the new lobby, is indirectly lighted from a concealed overhead cove in the ceiling panels.

All partitions are of gypsum block. All ceilings on the seven typical floors were furred down below the old ceiling in order to provide space for the installation of new piping, and to add to the sound-proofing qualities.

The work in this remodeled section, including the equipment for the kitchens, carpets, the furnishings and draperies in the lounge, is costing slightly in excess of $200,000.



Photograph by Frances Benjamin Johnston

BATHROOM (SECTIONAL STEEL WALLS) IN THE STONELEIGH COURT APARTMENTS IN WASHINGTON, D. C. JARRETT C. WHITE, ARCHITECT

Stocks of waste wood and wood chips, ready for fabrication into insulating materials, at plant of Wood Conversion Company, Cloquet, Minnesota.

FACTS ABOUT HEAT INSULATION

By J. L. FINCK,

director, The J. L. Finck Laboratories;

physicist, specialist on heat insulation;

formerly with U. S. Bureau of Standards,

Heat Transfer Section

Within recent years the application of heat-insulating materials to buildings and other structures has attained major economic importance for several reasons. First: insulating materials like the fiber boards serve as a substitute for sheathing and lath, and at the same time offer more insulation than would otherwise be obtained. Fiber boards, to a large extent, are made of materials which were formerly considered waste, as for example, sugar cane fibers or bagasse, corn stalks, wheat straw, waste wood, and the like. In this way there is a twofold advantage—the utilization of waste products, and the saving of lumber and indirectly our forest resources.

A second reason is the great economy that is realized in fuel, and comfort from insulated homes both in winter and summer. In almost all cases where insulation is applied the additional cost of the installation is more than covered within the first few years by the saving in fuel. A well-insulated home offers a more uniform inside temperature and therefore eliminates the sudden chills and suffocating heat which is experienced by those living in poorly constructed homes.

PROCESSING ROCK WOOL AT JOHNS-MANVILLE PLANT

1

(1) The molten rock as it flows from the cupola and is blown into wool which is carried into the blow chamber at the right.

(2) The opposite end of the blow chamber with the rock wool emerging in a felted sheet.

(3) The rock as it is carried up a conveyor for further processing.

2

3

INSULATION VALUES OF VARIOUS MATERIALS

On the market one finds insulating material in the form of rigid boards, blankets, loose fills, and what is of recent origin—metallic reflecting surfaces. The prospective buyer has such a wide variety of choice that he is actually at a loss as to what to select for his particular needs and must be guided by those familiar with the technical and engineering phases of the subject. However, there are a few basic facts about heat insulation which are of value when discussing insulation in general.

Let us compare various materials such as steel, stone, wood, and cotton. As heat insulators they may be arranged in the approximate relative proportion of 1 to 60 to 400 to 1,200, meaning that stone is about 60 times as good as steel, as a heat insulator, wood about 400 times that of steel, and cotton about 1,200 times as good as steel. In spite of these facts, it is possible to make a material out of steel, stone, or wood, which will compare favorably with cotton as a heat insulator. In fact, steel wool as a heat insulator compares with cotton in the ratio of 1 to 2; rock wool (fibrous limestone rock) is almost equal to cotton. Wood is shredded into fibers and fabricated into fine insulating boards and blankets.

Thus we see that the material itself does not play as important a part as its structure—if judged solely on the basis of insulating value. In forming a fibrous material, we are really utilizing the air as an insulator —the fibrous material serves to prevent convection (natural air currents) and radiation. (We shall consider the latter in more detail later.) The theoretical limit in insulation which can be attained with such materials is that of still air through which no radiation occurs. Since the fibers conduct heat somewhat, and some fibers conduct more than others, we do have differences in the insulating properties of various fibrous materials. Such differences may in extreme cases amount to one or twofold, whereas differences in solid materials may amount to from 60 to 400-fold, as already shown.

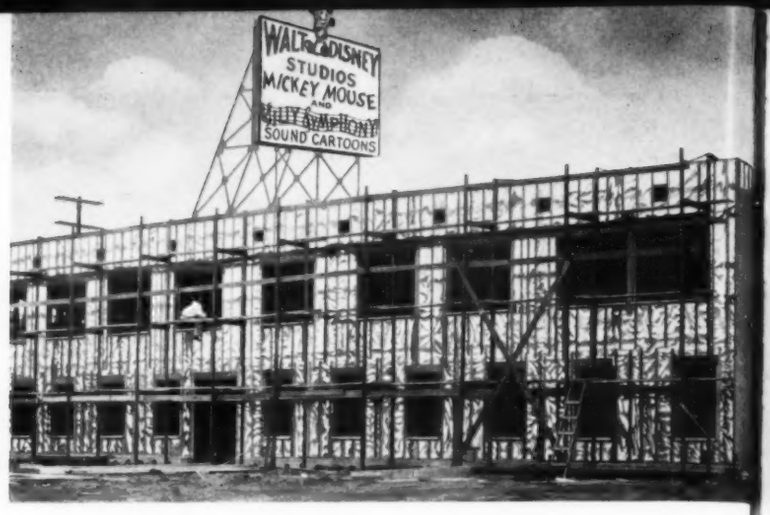
EFFECTS OF FABRICATION ON INSULATION VALUES

Differences in the insulating value of fibrous materials will depend on the method of fabrication. It is possible to make two materials out of the same fibers which may have large differences in insulating value. Much depends on how the fibers are arranged, on the character of the binder used (rosin, asphalt, etc.), and the density of packing. The writer has succeeded in forming two specimens out of fine flax fibers, both having the same density; in one specimen the fibers were arranged in a direction perpendicular to the flow of heat, and in the second the fibers were arranged parallel to the direction of the flow of heat. In the first case, the material was somewhat better than the best insulating materials on the market. In the second case, the material conducted as much heat as ordinary wood—the difference between the two specimens was about 250 per cent.* The reason for this large difference is due to the fact that in the second specimen the fibers served as a direct path for heat flow, while in the first case the poor contacts between the fibers offered considerable resistance to the flow of heat. Any chemical which may be added to protect the fibers from moisture, or to make them fireproof or vermin-proof, will tend to bond the fibers more or less and thus serve as a path for heat flow. Any such treatment in itself will usually reduce the insulating value of a material. The insulation of a fibrous material depends also on the density of packing—as a rule, the lower the density the better the insulation. There is, however, a limit to this—an optimum density is reached, beyond which the material again begins to conduct more heat.

INSULATION WITH AIR SPACES

Consider another phase of heat insulation, and take as an example a solid brick wall. The heat transferred through this wall is by a method known as conduction. All solid materials (including loose powders) convey heat by conduction. Should we remove part of the interior of this brick wall, we actually replace the solid brick by an air space. If we fill this air space with a material such as sawdust, for example, we improve the insulation of the wall as compared to that of solid

*See Research Paper No. 243, Bureau of Standards Journal of Research.



Installation of aluminum foil insulation (Reynolds Metallation) at new Mickey Mouse Studios in Los Angeles. R. V. Derrah, architect.

brick. The reason is that the conductivity of sawdust is less than that of brick. Obviously, if we should fill the air spaces with solid metal we will not improve the insulation of the wall. As a rule, the lower the conductivity of this loose fill, the better will be the insulation of the wall.

Suppose we do not fill the air spaces within the wall, but leave them hollow. Such hollow walls are better than solid brick as insulators. The question is, are they better than hollow walls filled with loose material? To consider this, more must be known about the behavior of air spaces as insulators—for air spaces have a law all their own. There is one characteristic of an air space which makes it different from solid or loose materials. In the case of the latter, the thicker the layer, the more insulation it will offer. In an air space, this is not always true. Starting with very narrow air spaces, we obtain more insulation by widening the space until a width of about ¾ inches is reached. Beyond that, say to 2 or 3 or 4 inches, the increase in insulation is very slight.

The reason is as follows: heat is transferred across an air space by conduction, convection (natural air currents) and radiation. The first is exactly like that transferred through a solid, and therefore the wider the air space the less heat is conducted. The second, being due to air currents, will transfer more heat as the space is widened—within certain limits. The first and second work in more or less opposing manner and at and beyond a width of about ¾ inches reach a steady condition. The third—radiation—is independent of the width of the air space, and in fact is practically the same whether there is air present or the space be evacuated. (More will be said about this last mode of transfer below.) All three effects operate simultaneously.

It can readily be seen why an air space is so anomalous, and we may now attempt to answer the question whether it is desirable to fill air spaces with loose materials. On the basis of data on the heat transfer through air spaces, we can state that in narrow air spaces (up to about 1 inch, say,) the filling of the air space with a material whose conductivity is less than 0.6 (B.t.u. per hour, per square foot area, per temperature gradient of one degree F. per inch) a gain in insulation will be obtained. For an air space of, say, 3 inches in width, a gain in insulation is obtained if it is filled with a material whose conductivity is even as high as 2.0 (in the same units as expressed above). Naturally, the lower the conductivity of the fill, the greater will be the gain in insulation in both cases.

INSULATION BY HEAT REFLECTION

Within the last few years the use of metallic reflectors as insulators has become increasingly popular. The paradox wherein an excellent conductor of heat is used as a heat insulator can be readily explained if we know what takes place within an air space. As mentioned above, of the three modes of transfer of heat across an air space, one is by radiation. This radiation is not visible light, nor is it X-rays, nor radio-waves, but in general characteristics it is very much like all three. It is known as infra-red radiation—a radiation not visible to the human eye, but which may be detected by an instrument such as a bolometer or thermopile. In everyday experience we speak of a "black" surface as one which absorbs all visible light. The surface of this magazine page, for instance, is "black" as far as infra-red rays are concerned. We mean by this term that the paper, which is white or reflecting to visible rays, is highly absorbent to infra-red rays. As a matter of fact, practically all materials used in building construction—brick, stone, wood, paper, and so on—regardless of their color to visible light, are over 90 per cent black for infra-red radiation. Therefore, air spaces within building walls are bounded by materials which are good absorbers of the radiation which impinges upon them.

Bright metallic surfaces are very good reflectors (poor absorbers) not only of the visible rays, but also of the infra-red rays. Therefore by coating any of these surfaces with bright metal (metal foil or bright metallic paint), there will be almost complete reflection of the infra-red radiation. The only heat then that is transferred across the air space is by conduction and convection.

Even so, it may be questioned whether by such metallic shielding we achieve much, since the two other facts are still in effect. It is an experimental fact that, of the total heat transferred across an air space, from 50 to 80 per cent is transferred by radiation. Therefore, by eliminating this very important mode of transfer, we actually do achieve considerable insulation. As a matter of fact, if one side of a stud air space is bounded by aluminum foil, the increase in insulation will be equivalent to that of the addition of about 0.6 inch of fiber insulating board. By inserting a sheet of paper, covered on both sides with aluminum foil, within the center of a stud space, the increase in insulation will be equivalent to that of the addition of about 1½ inches of fiber board.

HEATING A BUILDING WITH COLD WATER

Reversible air conditioning equipment, which may be adapted to either heating or cooling, depending on the season, is now in operation in the new building of the Atlantic City Electric Company at Salem, N. J. Engineers of the General Electric Company and the American Gas and Electric Company installed the equipment, which is the reversible-cycle refrigerating type, commonly known to engineers as a heat pump. Reversing the cycle of the ordinary household refrigerator, electrically-driven compressors absorb heat from a low temperature source, raise it to a higher level of temperature by mechanical compression of the refrigerant gas, and discharge it at high enough temperature to heat the building in cold weather.

In the summer the process is reversed. Both heat and moisture are withdrawn from the air of the building, and the heat is raised by the compressor to a high enough temperature level to be dissipated outside.

Outside air, the engineers point out, has an unlimited supply of heat even when the temperature is zero, but it is not available. The heat pump is essentially a device in which heat at a low temperature is absorbed and raised to a high temperature at which it can be utilized. The total heat made available by this means is not only that represented by the work of the compressor but also the heat from the outside source. Thus it is possible for an expenditure in electrical energy equivalent to 100 heat units to obtain a total of 400 or 500 heat units for heating, an efficient use of electricity.

Although installations of this general type have already been made, most of them have depended on outdoor air as the heat source. These have had the lowest heating capacity in winter, when a maximum was needed.

At Salem, the heat is drawn from a well of water readily available which maintains a natural temperature of at least 56 degrees in the coldest weather. Hence the equipment is able to deliver its maximum capacity without regard to outdoor weather conditions. The heat is transferred from the water to the refrigerant in a large water cooler, the water leaving the cooler at about 40 degrees. In the compression cycle, the temperature of the refrigerant is raised to 135 degrees and gives up its heat to the air within the building by passing through a condenser over which the air is circulating. In summer, this condenser will act as a cooling surface to cool and dehumidify the air, and the heat thus absorbed will be dissipated by the water cooler, which may then serve as a water heater. Humidifiers for winter use, air filters, and a high velocity fan and air circulating system complete the air conditioning apparatus, maintaining close automatic control of both temperature and humidity within the building summer and winter.

The building in which this equipment is installed is a two-story and basement brick and steel reinforced concrete structure, well insulated and of modern design. Engineering and planning for the project was done jointly by the two companies, and the equipment was built and installed by General Electric.

While unwilling to claim the development revolutionary, engineers point out that if performances bear out predictions, it will have a stimulating effect on the development of electric heating and air conditioning, not only by reducing the amount of electricity required but in making it possible to use the same equipment for heating and cooling.

FARMING FOR BUILDING MATERIALS

Chemurgy brings out in relief the correct interpretation of agriculture. No longer a pursuit to supply man with food and raiment, but a pursuit that shall bring into existence a vast array of chemical compounds to fit a myriad of ends. . . .

Even the crudest type of natural organic waste may find service in some connection. The impregnation of wood flour with phenol-formaldehyde condensation intermediates leads directly to plastics that admirably replace old-time wooden combustible material. Now the lamination of synthetic plastics leads to sheeting of unusual strength. When again this lamination includes a layer of thinly rolled metal between the laminae of synthetic plastic, we come to sheeting of tremendous strength and durability. In this we have the future of automobile body structure, and likewise of interior finish in homes. This is only one of a thousand instances that can be cited to show the drift from wholly inorganic material to organic material either alone or carrying a bit of the old-fashioned inorganic make-up.

Both the lignin and cellulose, out of wood, admirably fit into this picture of supplying organic raw products for fireproof and resistant materials of construction. Ordinary glucose or grape sugar offers another and interesting possibility in this direction. Just because our grandparents entertained the notion that sugar was just a food, is certainly no reason for us in following a notion now thoroughly disproved. Sugar is an excellent building material; in the near future we should be constructing water mains of plastics from this source.

From The Farm Chemurgic, by William J. Hale, Ph.D.; published by the Stratford Company, Boston, Mass.

PROTECTIVE COATINGS

A paper on protective coatings for metal which was read at the September 1933 meeting of the Electrochemical Society in Chicago, has been given wide publicity in technical magazines throughout the United States. This paper referred specifically to tests made over a period of years in England, the results of which fall under four headings:

1. Nature of the metal.
2. Presence of separating materials between metal and paint, such as mill-scale, rust, water or salt.
3. Character of paint as determined by the nature and quantity of the pigment, the oil, the thinner and the dryer.
4. Character of the atmosphere, water or soil to which the painted metal is exposed.

The metal prime coat seemingly evolves around red lead, red oxide, linseed oil and turpentine with a proportionate amount of dryer. This combination has been in use, and apparently an accepted fact, for a period of over fifty years, but during all this time statistics compiled by the Department of Commerce inform us that the wastage due to rust and corrosion reaches a figure of over $300,000,000 a year. This enormous annual destruction from rust and corrosion is steadily increasing in proportion to the amount of steel and concrete used in building.

Paint technicians who have carefully studied the problem agree that the various types of steel and iron, ranging from superior copper steel and electrolytic iron to a steel containing a high percentage of carbon and manganese, in their turn have different reactions on prime coating. The reactions in regard to moisture, humidity, acids, gases and salt spray have also been carefully noted.

RESULTS OF RECENT CORROSION TESTS

During the last few years chemists have investigated and made exhaustive tests to find the reason why the proverbial red lead has fallen short of the mark as a rust preventive. Experiments along these and other lines are well worth citing.

In Test 1 several pieces of steel were cut from angles, shapes and plates. The metal was thoroughly wire-brushed and in some instances sand-blasted. A good coating of red lead and linseed oil with turpentine was then applied, and the metal was exposed to the elements on the roof of a building in the heart of an industrial area and near salt water. After a period of two years, it was found that the linseed oil had completely decomposed, leaving a film of red lead and lead soaps containing a high percentage of moisture. The moisture in the red lead acted as an electrolyte, wherein electrolysis of the exposed molecules took place, causing rust and corrosion. It was further found that the lead soaps emulsified and became soluble in water and washed off, leaving the surface of the metal exposed to the atmosphere.

Test 2 used the combination of red lead and iron oxide (Indian) with linseed oil. This combination proved to be superior both chemically and mechanically to straight red lead with linseed oil. Microphotographs revealed that the small particles of red oxide in combination with the red lead materially helped to seal the open pores left in the linsed oil. An examination two years later demonstrated that moisture had penetrated to the metal and corrosion was taking place, but considerably less than with the straight red lead.

In Test 3 a number of metal pieces were coated with red oxide used with a nonporous vehicle. The surface of this metal had previously been allowed to oxidize and had a thin film of rust. A suitable type of thinner was used to carry the vehicle and to penetrate into the film of rust. This combination of red oxide, the nonporous vehicle and the thinner on oxidation formed an insulation around the particles of rust, which were bonded to the metal, thereby excluding any further attack of oxygen, and eliminating any possibility of rust or corrosion. Consequently, when an examination was made of this test two years later, the coating was found to be in perfect condition with no breaks or traces of moisture, in spite of the outside exposure to extreme heat and cold and the sun. The results of this test proved so satisfactory that several thousand gallons of this combination were manufactured and sold both in the industrial and marine fields; this further proved the practicability of the coating inasmuch as it was subjected to abrasion and general hard working conditions.

Chromates and linseed oil were combined in Test 4. The results this time were much the same as in the case of red lead and linseed oil, except that the former seemed to have slightly more lasting qualities.

Test 5 dealt with metallic zinc dust, 99% pure, and linseed oil. This combination when applied to metal gave an unsatisfactory result, owing to the porosity of the linseed oil vehicle.

Test 6 was made with a combination of metallic zinc dust and vegetable gums on pieces of clean steel and iron. The result of this test was highly satisfactory. It was noted that the vehicle formed a nonporous film and that the metallic zinc dust became homogeneous with the metal. This combination was tried on several ocean-going vessels where the exposed metal had been wire-brushed and apparently all previous paint coatings had been removed. However, after a period of approximately six months the coating began to peel off

FOR METAL WORK

By E. A. HURST,

President, Artic Chemical & Combustion Engineering Corp.

in places and on microscopic examination small particles of old paint were found to be in the pit holes, thereby preventing adhesion between the metallic zinc coating and the metal to which it was applied.

METALLIC ZINC PAINT TESTS

Test 7 was performed with metallic zinc paint. Sand-blasted steel test panels were given one or two coats—brush applied. No trouble or difficulty was found in the brushing qualities and the coverage was very good. A high-power mercury quartz lamp was used in this test, and it was noted that chalking and crazing were absent. The test was not carried to completion owing to lamp trouble, but the zinc paint showed up superior to red lead.

A salt spray test was also applied, a 20% sodium chloride solution being employed. Test pieces were kept in cycles consisting of 8 hours spray and then 16 hours saturated damp salt atmosphere. Under this treatment the samples stood up over 350 hours of spray plus 1,050 hours of dampness, the difference in ratio being due to weekend periods, without any indication of failure. There was no indication of rust creeping under the coat from the unprotected edges. Blisters, cracks, checking, crazing and chalking were entirely absent. On the other hand, red lead coats have failed in 24 hours of spray, and 200 hours is a good life for a top coat.

A test piece was subjected to weathering cycles, a cycle here consisting of

16 hours—damp dark atmosphere @ 100° F.
1 hour —ice water
7 hours—salt spray (20% sol.)
16 hours—cool damp dark atmosphere
1 hour —dry ultraviolet light
7 hours—moist ultraviolet light.

Under this treatment, the piece in question stood up for 25 cycles, there being no indication of failure, with the exception of a slight uniform lightening of color.

In an abrasion test, Gardner Emery abrasion apparatus was used and the life of the zinc coating was far superior to anything previously tested.

These exhaustive tests were continued for some time in order to prove further the efficacy of the metallic zinc paint in question. After the sample had been in salt spray 900 hours and in damp salt atmosphere about 2,700 hours, an examination under the microscope showed that the center of the panel was in very good condition. There was a tendency of the rust to creep *over* the paint at the edge of the panel. With the exception of a few spots at which the top coat of paint had shrunk away from the bottom coat, the panel was in good condition.

After the test piece had undergone 56 weathering cycles in all, the condition of the sample was as follows: The central portion of the panel showed a few cracks but did not exhibit any rust coming from these cracks. The edges were considerably discolored because of rust creeping *over* the paint, but when the rust was scraped away, a fair coating of paint was still seen protecting the metal. This sample was deeply scratched in the early part of the test, to allow the coating to disintegrate and the rust to creep under the coating if possible. An examination of this scratch showed it to be filled up with a rather high ridge of rust. The coating did not disintegrate around the scratch.

A portion of the panel was subjected to the light and water test. It was placed under water so that the ultraviolet light would play upon it. This test was continued for 180 hours and the coating stood up very well under this severe treatment. It cracked but slightly and only exhibited blisters because of the second coat separating in spots from the first coat.

CONCLUSIONS

There is no doubt, as a result of thorough tests of this kind, that combinations of technical coatings can be manufactured and applied that will eliminate rust and corrosion for a period at least twice as long as that of red lead, even though red lead has in the past been used as a prime coating for all types of metal.

It is obvious that the paint manufacturer is not in a position to dictate to the steel manufacturer the component parts of the steel. Protective coatings therefore have become a paint manufacturers' problem, in the same way that the lubricating problem is being solved by the oil refiners and not necessarily by the automotive engineers. Much has already been accomplished, because *technical coatings can be built to suit any purpose from a food-processing plant to a steel bridge*. This includes prime coatings such as are used in the automotive industry.

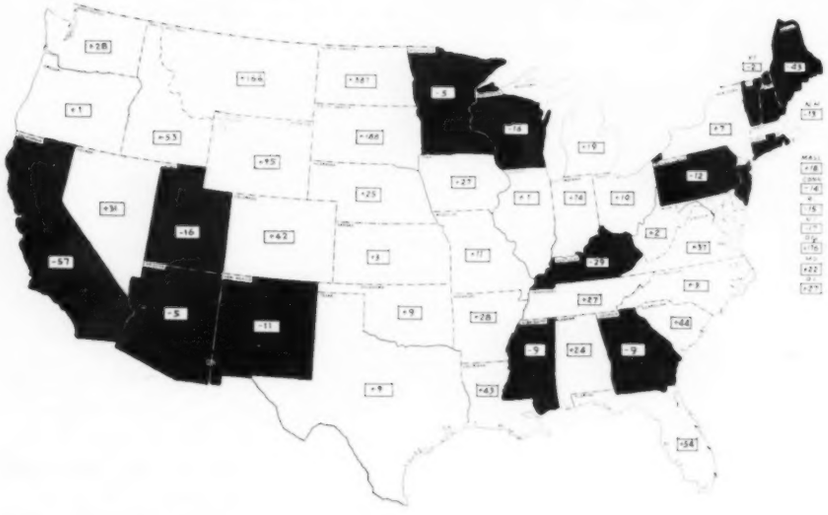
Tests have demonstrated that the time to prime coat steel is soon after oxidation takes place and loose mill scale has been removed. This should be done at the point where steel is manufactured, or as soon as it arrives on the ground for erection. This is especially necessary in the case of box girders or in parts of steel structures that are inaccessible after fabrication.

Many instances have come to light where poor prime coats have caused and accelerated rust and corrosion. It is therefore essential to apply a prime coat of the finest quality and *the proper one for the specific purpose to which the metal will be put.*

Improper undercoatings are the most expensive.

BUILDING TRENDS AND OUTLOOK

BY L. SETH SCHNITMAN
CHIEF STATISTICIAN
F. W. DODGE CORPORATION



BUILDING DURING 12 MONTHS — December, 1933 - November, 1934, INCLUSIVE. Corresponding twelve months ended November, 1933, taken as base. SHADED AREA: BELOW BASE. UNSHADED AREA: ABOVE BASE. Figures denote percentage change from base. Floor space for new building contracts, 37 states east of the Rocky Mountains. Permit valuations for Rocky Mountain and Pacific coast states. Map, copyright American Map Co., N. Y. Authorized reproduction No. 5025.

GAINS IN ALTERATIONS TO INCOME BUILDINGS AFFORD LARGER OPPORTUNITIES FOR ARCHITECTS

During the year 1934 alterations and repairs to existing buildings and structures approximated $350,000,000 in the 37 eastern states. Thus alteration projects accounted for about 22½ per cent of the value of all reported construction work in the area east of the Rocky Mountains, which, with the contract total for December, 1934, partly estimated, totaled about $1,544,000,000 for the year.

Alterations to buildings alone, as apart from engineering projects, approximated $270 million in the 37 eastern states; this represented a gain of about 64 per cent over the value of such work shown for 1933. Against the total for alteration and modernization jobs on existing buildings in 1934 in the 37 states is the contract total for new buildings in the same area of approximately $530 million; the gain in new building contracts over 1933 was thus only about 16 per cent.

An improvement in alteration and rehabilitation work between 1933 and 1934 in excess of 60 per cent was shown in commercial buildings; in fact, of all private buildings commercial structures accounted for the largest total amount of alterations that were undertaken in 1934. The reason is not hard to find, since most commercial buildings are income-producing properties which require more or less continuous alteration to insure a continuing income. In this field the architect has an expanding opportunity.

It is probable that 1935 will witness a further extension of the improvement in alteration and modernization jobs which will broaden to embrace other income-producing classes, chiefly apartment houses, which shared only too modestly in the general gains in alteration work reported during 1934.

MATERIAL PRICE MEASURING ROD

F. W. DODGE CORPORATION
COMPOSITE PRICES

MATERIAL	This Month	Month Ago	Year Ago
Portland Cement	$2.20	$2.20	$2.20
Common Brick	14.78	14.80	13.09
Structural Steel	1.65	1.65	1.65
Lumber	16.23	16.25	16.44

The prices in this tabulation enable one to visualize at a glance the main trend of the material market. Their significance does not extend beyond that point, and the explanation should be read carefully. Prices given in this comparison are composite and do not in all cases refer to one item. For instance, the price of structural steel is the composite of prices of shapes and plates f.o.b. Pittsburgh; the price of lumber is a composite of five items of Southern pine and five items of Douglas fir f.o.b. mill; the price of cement is a composite of prices in fourteen different cities per barrel, carload lots, to contractors; price of brick is composite in fourteen cities per M. delivered on the job.

NEWS OF THE FIELD

Sidney Schenker, architect, has moved his offices to the Franklin Trust Company Building, 144 Market Street, Paterson, N. J.

W. Whitehill, architect, has temporarily closed his New York City office and will carry on his business at his home office, 100 Pelham Road, New Rochelle, N. Y.

Ekstrand & Schad, architects, have opened an office in the Insurance Exchange Bldg. at 100 S. Genesee St., Waukegan, Ill.

W. Archibald Welden, having withdrawn from Kantack, Incorporated, where he was vice president and director of design in association with Walter W. Kantack, has established a design and manufacturing service under his own name at 22 East 40th Street, New York City.

A seminar on the plan of New York City will be given in the Columbia School of Architecture beginning in February, according to an announcement by Dean Joseph Hudnut. The seminar, which will include an analysis of the regional plan for New York, will be given by Dr. Werner Hegemann, who has been appointed lecturer in the School. Dr. Hegemann is a visiting professor at the New School for Social Research. He was formerly editor of "Stadtebau," German town planning monthly, and of a German architectural journal. He is the author of numerous books on architectural subjects and monographs on contemporary architects.

Appointment of Dean Joseph Hudnut of the Columbia School of Architecture as the first lecturer on the Charles T. Mathews Foundation is announced by President Nicholas Murray Butler. The Foundation, established through a gift of the late Charles T. Mathews, architect, provides for a series of free lectures annually on Gothic art.

The annual Industral Arts Exposition will be held April 15-May 15 at the Forum in Rockefeller Center, New York City, under the auspices of the National Alliance of Art and Industry. The exposition will be staged and designed under the direction of Harvey Wiley Corbett, architect. The exhibits, built around the needs of the American worker of modest means, will comprise housing, home appliances, transportation, communication, and leisure, as served by American industry. Among these exhibits will be a model of Frank Lloyd Wright's Broad Acre City, various housing project models by outstanding architects, train models, ship models, and automotive models.

The Modern Home Exposition in cooperation with the Federal Housing Administration will open Saturday, February 16, at the Coliseum (16th and Wabash), Chicago, and continue through Sunday of the following week. More than 250 manufacturers and dealers are expected to be represented with 350 exhibits of products allied with the building industry. Experts in various phases of modernization and home furnishings are scheduled to speak at the sessions.

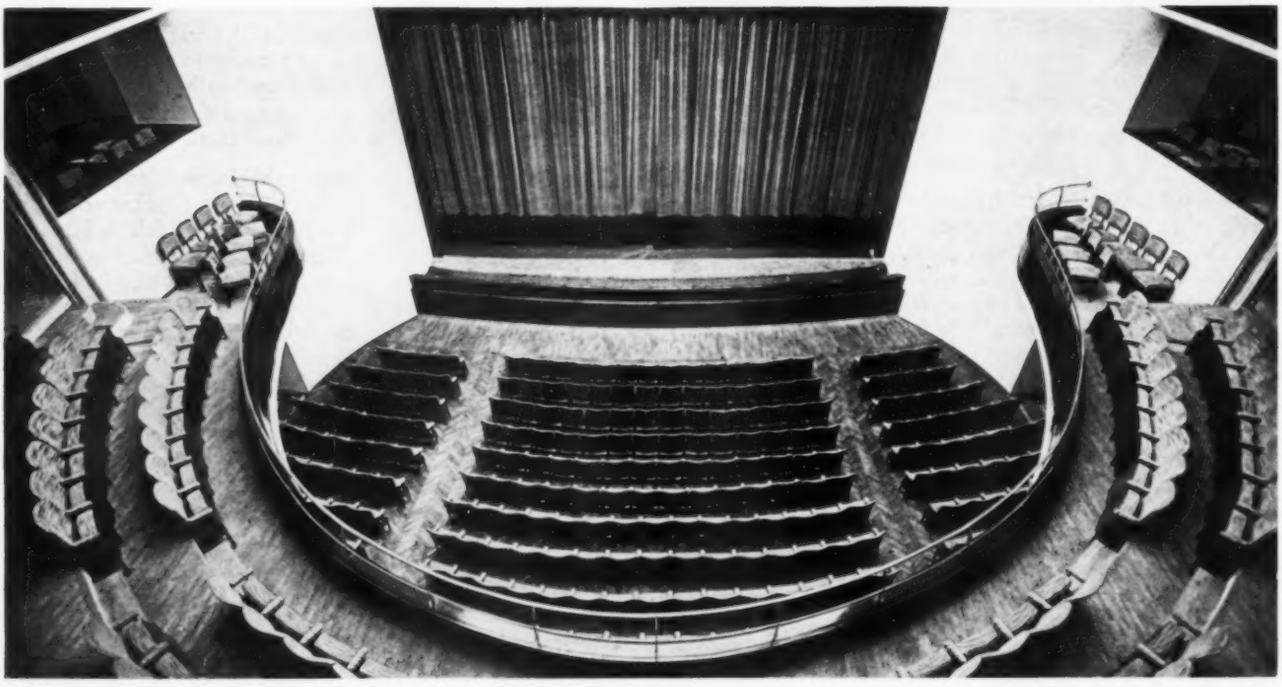
Sponsored by the San Francisco Builders Exchange, a Building Mechanics Exposition is to be held in San Francisco during the late spring of 1935. The exposition, which will be similar to those of the old Mechanics Fair, is intended primarily to afford the potential buying power of the trade area of the Pacific Coast the opportunity to visualize and inspect the many products used in building construction. At the same time it is designed as an effort to assist in increasing interest in the Federal Housing campaign.

The Governing Committee of the James Harrison Steedman Memorial Fellowship in Architecture announces the ninth competition for this Fellowship, which is intended to assist well-qualified architectural graduates to benefit by a year in travel and the study of architecture in foreign countries, subject to the approval of the Committee and under the guidance and control of the School of Architecture of Washington University. To this end an annual award of fifteen hundred dollars is offered to the winner. The Fellowship is open on equal terms to all graduates in architecture of recognized architectural schools of the United States. Such candidates must be American citizens of good moral character, and shall have had at least one year of practical work in the office of an architect, including one year's residence in St. Louis, Mo., before being entitled to assume the benefits of the Fellowship. All candidates shall be between twenty-one and thirty-one years of age at the time of appointment to this Fellowship. Application blanks for registration can be obtained at any time upon written request addressed to the acting head of the School of Architecture of Washington University, St. Louis, Mo., to whom application blanks properly filled out must be returned not later than January 18. Each application must bear the endorsement of three members of the American Institute of Architects, one of whom at least must be a resident of St. Louis.

CALENDAR OF EXHIBITIONS AND EVENTS

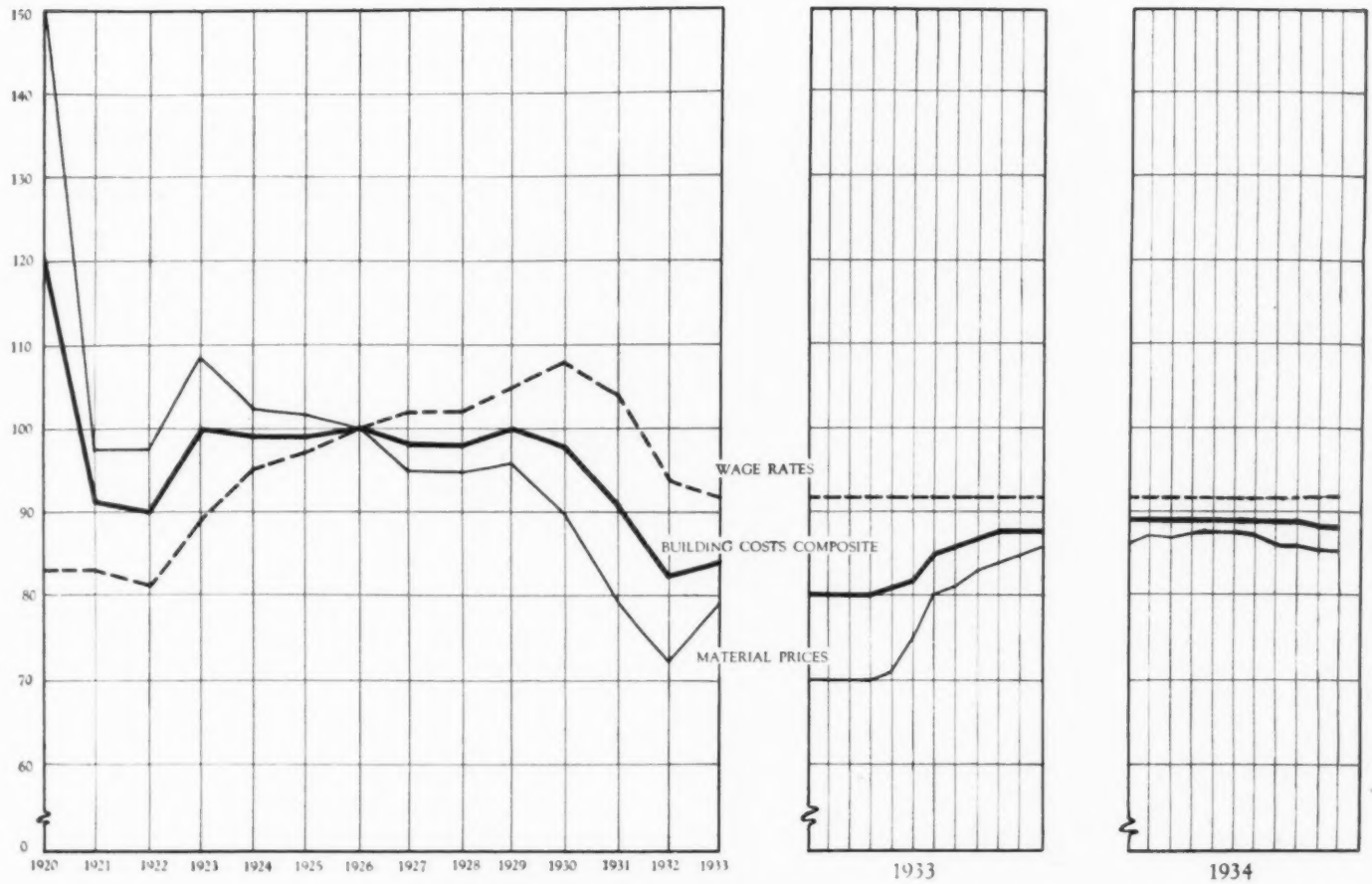
January 18	Closing date of ninth annual collaborative competition for architects, landscape architects, painters and sculptors, held by Association of the Alumni of the American Academy in Rome, 101 Park Avenue, New York City.
January 18	Closing date for filing applications for Steedman Fellowship with School of Architecture of Washington University, St. Louis, Mo.
Until January 26	"Art in America" programs broadcast every Saturday night over Station WJZ and national network.
January 28-30	Forty-first annual program of the American Society of Heating and Ventilating Engineers at Hotel Statler, Buffalo, New York.
January 30-March 7	Exhibition of work of George Caleb Bingham, Gaston Lachaise, and Henry Hobson Richardson, at Museum of Modern Art, New York City.
February 1	Closing date for entries in the Annual Competition for Prizes of Rome. Address Roscoe Guernsey, Executive Secretary, American Academy in Rome, 101 Park Avenue, New York City.
February 16-24	Modern Home Exposition at Coliseum, Wabash Avenue and 16th Street, Chicago.
Through February	Whistler Centenary Exhibition of Prints at the Metropolitan Museum of Art, New York City.
March 18-May 14	Exhibition of African Art, Museum of Modern Art, New York City.
April 15-May 15	Industrial Arts Exposition at Rockefeller Center, New York City, under auspices of National Alliance of Art and Industry. Model of Frank Lloyd Wright's Broad Acre City. Housing models by other architects.

NEXT MONTH

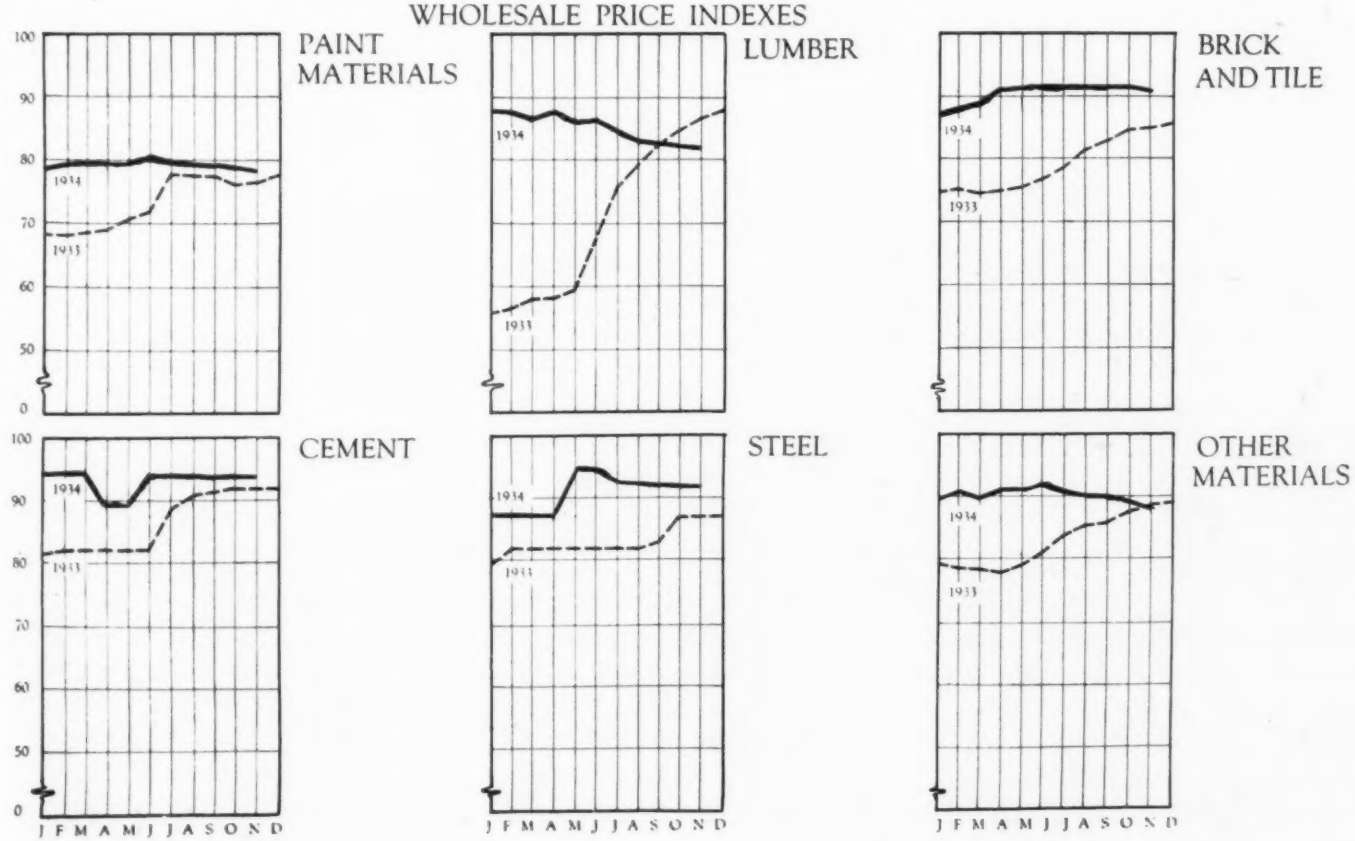


SPECIAL BUILDING TYPES, including theaters, a beauty parlor, a restaurant, a parking garage, publisher's office, school of arts and crafts, a church, shops.

ARTICLES on the Tennessee Valley Authority; What Do Slums Cost? by William Stanley Parker; Construction To Resist Earthquakes.



WHOLESALE PRICE INDEXES



1926 MONTHLY AVERAGE = 100

MATERIAL PRICES, BUILDING WAGE RATES AND BUILDING COSTS COMPARED

WAGE SCALES IN THE BUILDING TRADES

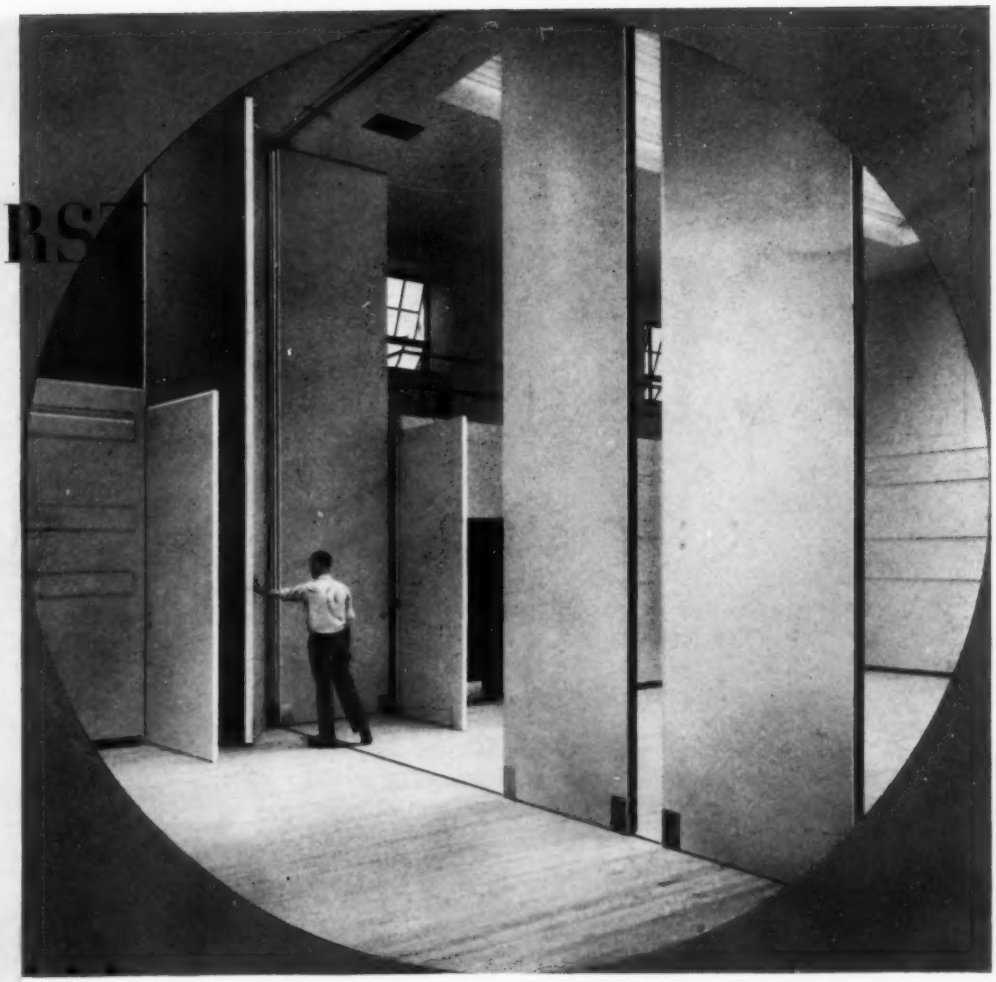
Information Furnished by National Association of Builders Exchanges and Compiled by Division of Statistics and Research, F. W. Dodge Corporation, as of November 15, 1934

	Asbestos Workers	Bricklayers	Bricklayers Tenders	Carpenters	Cement Finishers	Electricians	Hoisting Engineers	Iron Workers—Ornamental	Iron Workers—Structural	Laborers	Lathers	Painters	Plasterers	Plasterers' Tenders	Plumbers	Roofers—Composition	Roofers—Slate & Tile	Sheet Metal Workers	Steamfitters	Stone Masons	Tile Setters	Tile Setters' Helpers
Akron	$1.00	$1.25	$0.45	$0.70	$0.70	$0.75	$0.70	$0.60	$0.60	$0.40	*$0.87½	$0.65	*$1.00	$0.62½	$0.85	$0.80	$0.80	$0.80	$0.85	*$1.25	*$1.25	*$0.50
Atlanta	1.00	1.25 1.40	‡.30 .45	.70	1.25	.90 1.10	.60 1.00	.35 1.85	1.25	.25 .35	1.00 1.25	.75	1.25	.30 .45	1.25	.80	.80	.90 1.00	1.25	1.00 1.25	1.25	.40
Baltimore	1.00	*1.10	1.10	1.00	*1.00	*1.00	*1.50	*1.37½	*1.37½	.40	*1.25	1.00	*1.25		*1.10	.75	.75	*1.12½	*1.10	1.10	1.25	.65
Boston	1.25	*1.30	.70	*1.17½	1.17½	*1.25	1.17½	*1.20	*1.20	.70	*1.50	*1.12½	1.37½	*.95	*1.25	*1.17½	*1.05	1.17½	*1.25	*1.30	*1.30	*.95
Buffalo	1.00	*1.25		*1.00	1.00	1.12½	1.00	1.12½	1.12½	.40 .50	1.25	*1.00	1.00		1.20	.60	1.00	1.00	*1.20	*1.25	*1.18¾	
Chicago	1.37½	1.50	.82½	‡1.31¼	1.31¼	1.50	1.31¼	1.33⅓	1.35	.82½	*1.50	‡1.33⅓	*1.50	88¾	1.37½	1.37½	1.50	1.37½	1.37½	1.50	1.50	1.00
Cincinnati*	1.15	1.37½	.70	1.20	1.02½	1.25	.80 1.25	1.25	1.25	.45	1.31¼	1.15	1.37½	.70	1.25	1.02½	1.07½	1.07½	1.12½	1.25	1.00	
Cleveland*	1.17½	1.25		1.12½	1.12½	1.37½	1.12½	1.25	1.25	72½	1.25	1.20	1.25		1.25	1.15	1.37½	1.12½	1.25	1.25	1.25	.81¼
Columbus	1.00	1.30	.62½	.80	.80	1.00	1.15	1.25	1.25	.40	1.00	.80	1.00	.62½	1.00	.80	1.00	.80	1.00	.75	1.25	.50
Dayton*	1.25	1.30	.80	1.00	1.15	1.55	1.25	1.35	.50	.50	1.10	1.00	1.20	.80	1.00	.85	1.00	1.00	1.00	1.30		
Denver††	9.00	12.00 *13.00	6.50 7.00	10.00	10.00 11.00	10.00 11.00	10.00	10.00 11.00	10.00 11.00	4.00 5.00	11.00	*10.00	12.00	7.00	11.00	7.00 8.00	7.00 8.00	9.00	9.50	12.00 13.00	10.50	†.62½
Des Moines	1.00	1.50	.90	1.15	1.12½	1.25	1.25	1.00	1.00	.77½	1.43	1.25	1.37½	.90	1.25	1.00	1.00	1.00	1.25	1.50	1.25	.67½
Detroit	1.37½	1.25 max.	.55 .60	.80 1.00	.70 .90	1.25 1.40	.60 1.00	1.00 1.20	1.00 1.25	.50 .55	1.37½	.80 1.00	1.00 1.25	.70 .80	1.00 1.50	.70 .90	.80 1.00	.80 1.00	1.25 1.50	1.25 1.50	1.00 1.25	.80
Duluth	1.00	1.00	.50	.80	.80	1.00	.80		1.00	.50	.80	.80	1.00	.70	1.00	.70	1.00	.85	1.00	1.00	1.00	1.00
Erie		1.00	.45 .50	.80	.80	.90 *1.00	.90	.60 .80	.90	.40	.90	.60 .70	1.00	.40 .50	1.00	.50 .60	.80 .90	.80 .90	*1.00	1.00	.80	.40 .50
Houston		1.00	.35	.75	.75	1.00	.75	1.00	1.00	35		.62½	1.00	.35	1.00	.75	1.00		1.00	1.00	1.00	
Indianapolis	1.32½	1.62½	.90	1.22½	1.17½	1.50	1.37½	1.45	1.45	.40 .45	1.37½	1.25	1.57½	1.00	1.00	.60 .90	1.27½	1.22½	1.50	1.62½	1.50	.60
Kansas City	.90	1.32½	.80	1.00	1.00	1.00	1.00	1.00	1.00	.60	1.00	1.00	1.06¼	.80	1.00	.92½	.92½	1.00	1.00	1.12½	1.25	.62½
Los Angeles††	10.00	8.00	6.00	7.00	8.00	7.00	8.00	9.00	10.00	4.00	10.00	7.00	9.00	6.00	9.00	7.00	7.00	8.00	10.00	8.00	6.00	†.75
Louisville	1.00	1.25	.62½	1.00	1.00	1.00	1.00	1.00	1.00	.40	1.12½	.95	1.00	.62½	1.12½	.40	.85	.85	1.12½	1.25	1.00	
Memphis	1.00	1.37½	.50	.87½	1.10	1.00	1.12½	.87½	.87½	.40	1.00	1.00	1.25	.50	1.25	.75 1.00	1.12½	1.12½	*1.25	1.37½	1.25	.50
Milwaukee	1.00	1.25	1.25	.92½	1.00	1.25	1.00	1.05	1.05	.60	1.20	1.00	1.20	.80	1.20	1.00	1.00	.92	1.20	1.25	1.25	.80
Minneapolis	1.00	1.00		.80	80	1.00	.80	.90	1.00	.45	.75 .85	.80	1.00	.70	1.00	.70	.70	.80	1.00	1.10	1.00	.65
Nashville		1.00		.60 .75	.50	.75		.60	.75	.40	1.00	.62½	1.10		1.10	60	.60	.60	1.10	.50	.75	
New Haven*		1.20	.50 .60	.80 1.06¼	1.20	.80 1.00	1.16¾ 1.27½	1.37½	1.37½	45 .65	1.27½	.80 1.00	1.20	.50 .60	1.06¼		1 50	1.06¾	1.06¾	1.20	1.20	
New Orleans	.65 .80	1.25	.85	.55 .75	1.00	1.25	1.25	1.25	1.25	.35 .50	1.25	.75 .90	1.25	.75	1.00 1.25	.40	.90 1.15	.90	1.05 1.25	1.50	1 25	.35
New York City††	11.20	12.00	7.20	11.20	e11.20	11.20	13.20	11.20		6.60	11.20	9.00	12.00	8.50	e12.00	10.28	12.62	11.20	11.20	12.00	11.50	8.50
Oakland	6.40	‡9.00	‡6.00	7.20	8.00	8.05	8.00	11.00	11.00	5.00	7.50	7.00	‡7.50	‡6.60	8 80	6.40	6.40	8.80	9.00	9.00	8.00	5.00
Oklahoma City††	8.00	8.00	4.00	6.00 8.00	8.00	6.00 8.00	8.00	8.00	8.00	3.50	†.80	7.00 8.00	†.80	4.00	†.80	6.00	6.00	8.00			11.00	†.62½
Omaha	1.32½	1.12½	.45	.90	1.00	1.00	1.00	.90	.90	.50	.90	.80	1.20	.80	1.20	.72½	95	1.00	1.20	.90	1.00	.50 .60
Philadelphia	1.00	1.50		1.00	1.05	1.25	1.18½	1.25 1.37½	1.00 1.37½	.40	1.37½	.90	*1.37½		1.20	1.00	1.25	1.25	1.20	1.25	1.12	.75
Pittsburgh	*1.50	*1.50		*1.25		*1.56¼	1.37½ 1.43¾	*1.37½	1.37½	70	*1.50	.87½	*1.50		1.50	*1.25	*1.50	*1.31¼	*1.50	*1.40	1.33¾	.88
Portland, Ore.††	8.00	*0.60	7.20	7.20	*7.20	*8.00	6.40 9.60	8.80	8.80	4.80	*8.80	7.04	*9.60	*7.20	*8.80	7.20	7.20	*8.00	*8.80	*0.60	8.00	7.20
Reading	.80	.80	.60	.80	.80	.80	.80	.80	.90	.40	.90	.63	.90	.60	.90	.80	.80	.70	.90	.70	.75-1.15	.50
Richmond	.60 .65	1.25		.60	.35 .40	.80		.70	.70	.40	1.00	60	.60		.90	.60	.60	1.00	.90	1.25	1.25	
Rochester	.91	1 25	.55	1.05	*1.25	‹1.20	.90	.70-	*1.00	.70-1.00	.55	.90	1.05	*1.25	.55	*1.20	*.95	*. 95	1.05	*1.20	*1.25	1.20	.47½
Salt Lake City ††		9.00	5.00	7.20	8.00	1.12½	1.12½	1.12½	1.12½	4.00	1.10 1.25	7.20	1.50	1.10	8.00	7.20	8.00	8.00	8.00	9.00	8.00	4.00
San Antonio††	6.00 10.00	6.00 10.00	2.00 3.00	2.00 7.00	3.00 8.00	3.00 7.00	4.00 7.00	1.75 4.50	-5.00 10.00	1.50 2.50	4.00 7.00	3.00 7.00	4.00 8.00	2.00 3.00	5.00 8.00	5.00 6.00	4.00 6.00	3.00 7.00	5.00 8.00	3.50 8.00	4.00 10.00	2.00 3.00
San Francisco	6.40	9.00	7.00	7.20	7.20	9.00	9.00		9.60	5.00	8.00	7.00	8.80	7.50	8.00	8.00	8.00	7.20	8.00		8.00	5.00
Seattle††	8.00	9.60	5.28	7.20	7.20	*8.80	8.00	8.00	8.80	4.75	*8.80	7.20	*9.60	*6.40	*8.80	7.20	7.20	8.00	*8.80	9.60	8.00	
Sioux City	1.00	1.25	.50	1.00	.90	1.00	.80	.90	.90	.50	1.00	1.00	1.25	.60	1.20	.90	.90	.85	1.20	1.25	1.00	.60
St. Louis	1.25	1.50	.87½	1.25	1.31¼	1.50	1.35- 1.47	1.47	1.47	.78¾	1.25	1.25	1.50	1.06¼	1.43¾	1.17½	1.25	1.25	1 43¾	1.25	1.25	.76¼
St. Paul	1.00	1.10	.55	.80-.90	.80	1.00	.80	1.00	1.00	.50	1.20	1.00	1.20	.85	1.20	.75	.75	.85	1.20	1.00	1.12½	
Washington, D.C.	*1.50	1.75	.50 .75	*1.37½	1.25	*1.65	*1.37½	*1.65	*1.65	.75	*1.62½	*1.37	*1.75	*.75	*1.50	*1.37½	*1.37½	*1.50	*1.50	*1.25	*1.50	.75
Wichita	.60	.75 1.25	.25 .40	.40 .75	.40 1.00	.50 .87½	.30 .75	.40 1.00	.40 1.00	.20 .40	.50 1.25	.50 .87½	.60 1.25	.25 .50	1.00	50 1.00	.50 1.00	.50 1.00	.75 1.12½	.75 1.25	.50 1.00	.25 .40
Youngstown††	*1.00	1.25	.60	.75-1.00	1.12½	1.00	1.12½	1.25	1.25	.40	1.00	1.00	1.25	.75	1 00	1.00	1.00	1.00	1.00	1.25	1.25	.81¼

NOTE.—Where two figures are shown they are the minimum and maximum. All figures are for hour rates except as indicated. ††8-hour day. ‡6-hour day. †Rate per hour. *On 5-day week basis. eCorrection. Asterisk after city indicates all trades on five-day week basis.

ABOVE DATA ARE WAGE SCALES AND DO NOT NECESSARILY INDICATE ACTUAL WAGE RATES BEING PAID IN THE RESPECTIVE TRADES.

a.c.f. FAIRHURST *folding* WALLS



The problem of flexibility of space is most satisfactorily solved by use of the Unitfold wall, manufactured by the American Car and Foundry Company under the well and favorably known Fairhurst Patents. Public buildings of all types, including schools, Y.M.C.A.'s, churches, hotels, clubs, gymnasiums, funeral parlors, etc., have found that the use of the Unitfold folding wall adds to the utility of their space and eliminates all cost of maintenance of the unit.

The Unitfold folding wall is simple to operate; shows no visible hardware; harmonizes with any surroundings; uses no hinges or bolts; can be locked in place with one key; and may be fitted at any point with shuttle or communicating doors.

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Architects are invited to use the coupon on this page as a convenient means of obtaining manufacturers' publications describing in detail the products and materials mentioned

A51
NEW PLYWOOD FOR OUTDOOR USE

A new type of plywood declared to offer marked advantages for outdoor uses is announced by the Harbor Plywood Corporation of Hoquiam, Washington. The new panels are fabricated under exclusive processes using a resin glue which is applied dry between alternating plies of wood. Each panel is hot-prest individually between massive heated plates in a gigantic press which takes panels up to 102 inches wide and any length required. This new super plywood is glued, dried and ready for use in from three to five minutes instead of requiring about twelve hours drying as under the old process. Exposure and boiling tests indicate it can be used indefinitely for outdoor purposes with no separation of plies and without warping. It is expected to open up many new fields for application of laminated wood, especially for forms in concrete construction. Other advantages claimed for the new material are: (1) greater flexibility, (2) increased insulation, (3) resistance to molds, fungi and insects, which will not attack or penetrate the resin binder, (4) increased fire resistance and (5) greater ease in handling and working, with reduced wear on tools.

A52
ALLIS-CHALMERS MANUFACTURING COMPANY

New Seal-Clad Inductor Motor, with protected windings is described in Leaflet 2182, issued by Allis-Chalmers Manufacturing Co., Milwaukee. Seal-Clad Motors are built in ratings up to 25 h.p., 1,800 r.p.m., furnished with either ball or sleeve bearings. Principal feature is the use of moulded shields providing absolute protection to the windings against damage from metallic dust, grit, oil, moisture and mild acids.

A53
NEW-TYPE WINDOW INTRODUCED AT METROPOLITAN MUSEUM EXHIBIT

A weight-hung window, made of aluminum and designed in simple lines for wide residential use, is introduced by the Kawneer Company through the exhibition of Contemporary American Industrial Art, at the Metropolitan Museum in New York City. Sash, frame, and weights are built into one unit, glazed and ready for quick installation. Mullions are reduced to 1-inch. These narrow mullions, together with narrow sash members and frames, are said to admit more daylight for any given window size than does ordinary construction. Several unique advantages are claimed: elimination of shrinking, swelling, warping, rattling, rusting, and rotting out, and thus the causes of most window difficulties removed. The aluminum sash and frame members withstand the elements indefinitely without further protection or renewal. Upkeep and maintenance expense have been reduced to a minimum if not altogether done away with. Although sash may be operated with slight effort, it fits snugly against the frame, slides on integral weatherstrip guides, and effectively keeps out rain, snow, wind, or dust. Because of its simplicity of construction and design this new window is said to harmonize with the most modern domestic architecture, as well as with conventional types.

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about any products mentioned, write the index numbers in space below. For literature about products *advertised* in this issue, give name of the product and manufacturer. Return coupon to The Architectural Record, 119 West 40th Street, New York, N. Y.

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• This is how Eagle Home Insulation is blown between joists in the attic floor by a special pneumatic method. The hose is run in through an open window. No muss downstairs.

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● All authorities have come to the same conclusion. The *best* insulation is *thick* insulation. Not half-an-inch thick. Not one-inch thick. But *full wall thickness.*

Eagle Home Insulation provides this "wall-thick" insulation at moderate cost. Eagle Home Insulation is a soft, fluffy "wool" that is made from rock. It is blown between the joists in the attic floor and into the hollow spaces between wall studdings by a special pneumatic process. It packs evenly and will not settle. Trained operators do the work. In most homes the complete job takes from one to two days. No building alterations are necessary. And there is no mussing up inside.

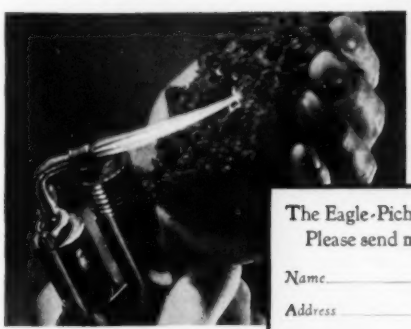
U. S. Bureau of Standards tests give Eagle Home Insulation the exceptionally low conductivity rating of 0.27 (at 103° F. mean temperature). In ordinary wall thickness (3⅝") Eagle Home Insulation has the insulating efficiency of a solid concrete barrier *eight feet thick.*

For free sample, mail the coupon below.

FOR COMPLETE DATA, SEE SWEET'S CATALOG

• No building alterations are necessary when Eagle Home Insulation is installed. To gain access to hollow spaces between wall studdings, operator removes a few pieces of siding, or a few bricks, or makes small openings in stucco.

• Eagle Home Insulation is also available in "bat" form for new construction. These bats are 15" by 18" and 3⅝" thick.



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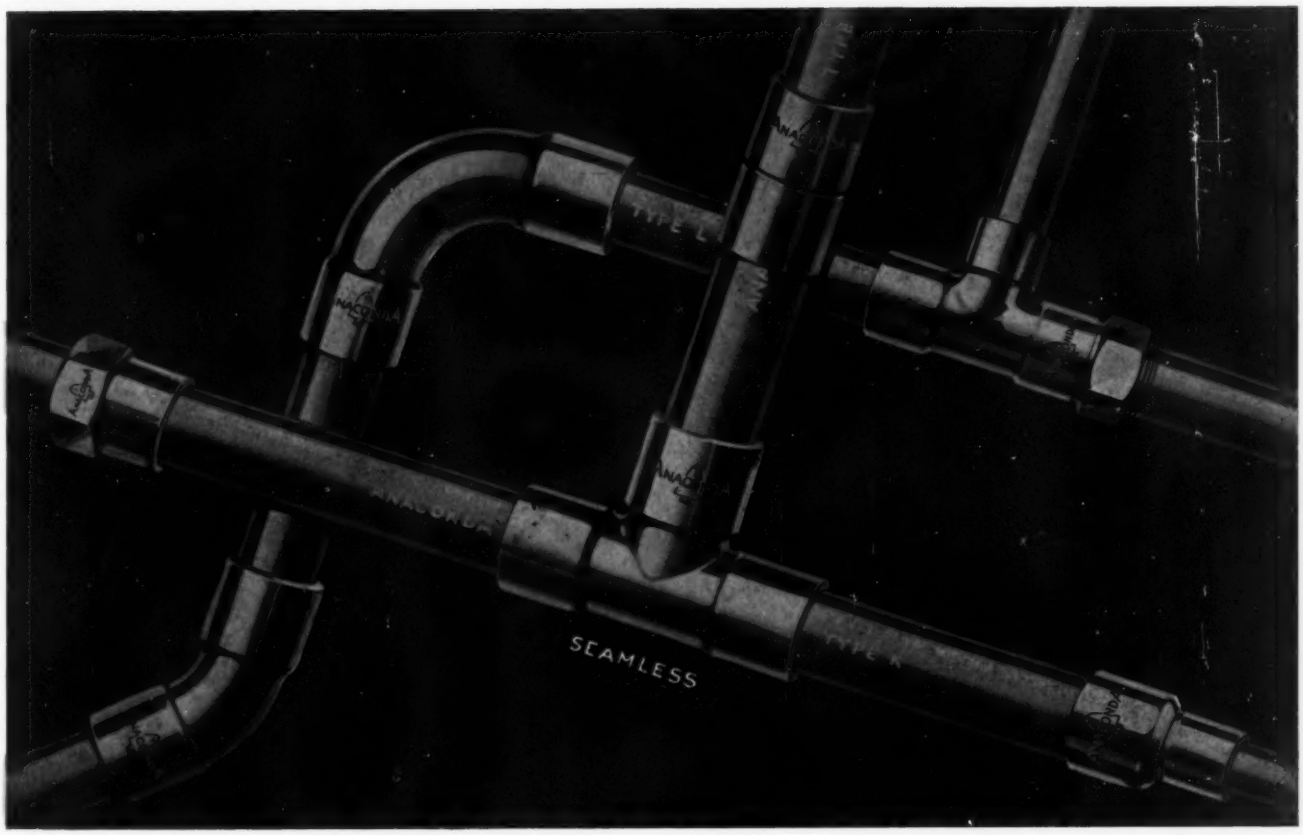
A54
A FREIGHT ELEVATOR DOOR OF NEW TYPE

The A-D Flush-Well Freight Elevator Door is built on an entirely different principle from that generally used. The mechanical operation is simple yet revolutionary. The principal difference from the ordinary freight elevator door is that, when the door is opened, it is lifted entirely free of the shaft and is supported on the superstructure of the car and not on the shaft wall. The door when closed rests on the steel sill and is locked to fit tight against the steel head, jambs and sill. If desired the doors may be made smoke and gas proof. The doors when closed present a flush shaft with no sills projecting beyond the doors. Only one motor is required to operate all doors and that is mounted on the superstructure of the car, thus eliminating the usual one or two motors required for each door. The door must be closed and automatically locked before the car can be operated. Only one shaft door can be operated at a time in normal operation. Trucking is done over the sill and not over the doors. Doors may be used in any story height and no pass type door is required for low story heights. Each door has two hinged panels mounted in an angle iron frame. In an emergency, two hinged panels of the doors swing into the building and elevator is locked in position while the panels are open. The car can be operated with emergency switch but door "operator" will be dead. The first and operating costs are low and upkeep is negligible. Doors have been in operation in Lynn for over 3 years without need of servicing. A-D elevator doors are manufactured by Babcock-Davis Corporation, 474 Dorchester Ave., Boston, Mass.

A55
CRANE HAND BOOK

Architects and Engineers Hand Book and another publication, Product Information Bulletin on Crane Gas Water Heaters are offered by the Crane Company, Premier Heater Division. The Hand Book describes Basmor Gas Fired Boilers including controls, roughing-in dimensions, capacities, horsepower ratings and other information valuable to architects in specification. It includes also methods of estimating gas consumption, calculating heat loss, etc. The Product Information Bulletin reviews all Crane Automatic Gas Water Heaters in domestic sizes from 20 gallons up to 100 gallons in capacity in both galvanized steel and Everdur copper tanks, and on up to large volume water heating requirements as covered by the Basmor Gas Fired Boiler.

Following is a brief description of the operating methods of Crane hot water heaters: When the heater is first lighted, the storage supply is quickly heated to the temperature at which the control is set. This is usually 140° Fahr. but can be adjusted from 80° to 180° Fahr. As the set temperature is reached, the temperature control, with instant action, shuts off the gas supply to the main burner and a tank full of hot water is ready for instant service.



WROUGHT SOLDER FITTINGS

now round out our complete service

TO MAKE possible the use of Anaconda products for practically every copper tube and fitting installation, we are now furnishing a complete line of Anaconda Wrought Copper Fittings — elbows, tees, couplings and unions, including a complete range of reduction and adapter combinations.

Supplementing our present line of Anaconda Cast Bronze Solder Fittings, these new wrought fittings provide copper to copper connections, and are uniform in quality and free from porosity. The use of precision gauges in the manufacture of both Anaconda Tubes and Fittings, insures accuracy and conformity to the close tolerances required for dependable solder connections.

Anaconda products for copper tube installation are now available in the range of sizes shown below. Architects desiring to specify Anaconda products will welcome this all-inclusive line of copper tubes and fittings for practically every need —not only in plumbing and heating, but also in refrigeration, air conditioning, oil burner and sprinkler installations, and industrial piping.

ANACONDA DEOXIDIZED COPPER TUBES—*Types* "K" *and* "L"		⅛" TO 8" *incl.*
ANACONDA WROUGHT COPPER SOLDER FITTINGS		⅜" TO 2" *incl.*
ANACONDA CAST BRONZE SOLDER FITTINGS		¼" TO 6" *incl.*
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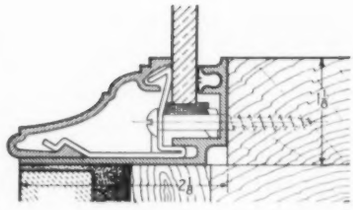
A56
NEW CLEANING VALVE

Excelso Products Corporation of Buffalo announces a Klearway Cleaning Valve new in design and construction. Its purpose is to remove sediment from heater, tank and piping in domestic hot water supply systems. By turning the handle to either of the two cleaning positions indicated on the dial, one-half of the system is flushed out under pressure, while the opposite side is closed off. By reversing the operation the opposite side of the system is likewise cleaned. The New Klearway Valve is not a ground key valve, but is built somewhat on the lines of a spring faucet. It is supplied with a brushed brass body with chrome plated handle and cam. Another feature is the adjustable stem which permits compensation for wear on the drain washer. Descriptive folder is available.



A57
"PITTCO"—NEW STORE FRONT

Pittsburgh Plate Glass Company announces "Pittco," a complete line of metal units, featuring a new cushion-grip sash for store front construction. Exposed members are formed by extruded process. Design provides a double yielding cushion-grip on glass. Furnished in Alumilite, a hard finish that is an integral part of the aluminum metal, it is said to match well with Carrara Structural Glass. Sash is also furnished in Architectural Bronze, in Satin and in Polished finish with wax protection. Will be provided with means for drainage when specified. Among noteworthy features are: (1) vertical bars can be set at any angle; (2) inside members and glass can be set and show window put to use before outside units are applied; (3) non-ferrous metal supporting blocks prevent tipping, rocking or sliding out of line during setting of glass; (4) heavy metal cleats seated in groove at corners secure miters against rising, spreading or falling due to faulty framework; (5) glass holding units and face members are self-adjusting to various glass thicknesses without tilting; (6) both glass and sash are set from outside by standard wood or machine screws and screw driver; (7) square-cut, metal flange projects over edge of structural glass, shielding most vulnerable area.

Five detail sheets have been prepared by the manufacturer and are available on request.

A58
QUIETILE

A brochure has been released by U. S. Gypsum Company. It explains and illustrates Quietile, a wood fibre product used as a decorative tile finish which has great sound-absorbing capacity; it is finding wide applications in offices, restaurants and similar places where sound-deadening materials are needed.

TRADE ANNOUNCEMENTS

REPUBLIC STEEL CORPORATION

Paul W. Gregory has been appointed general manager of the Canton Culvert Co., Canton, Ohio, subsidiary of Republic Steel Corporation, according to an announcement by N. J. Clarke, vice president in charge of sales of the parent organization.

N. J. Clarke, Vice President in charge of Sales, Republic Steel Corporation, Youngstown, Ohio, announces appointment of Steel Products Co., McKees Rocks, Pa., as warehouse distributors of Republic's Toncan Iron sheets in the Pittsburgh area.

Appointment of three new warehouse distributors of Enduro Stainless Steel is announced by Republic Steel Corporation, Youngstown, Ohio. The new distributors are: Buhl Sons Co., Detroit, Mich., F. W. Heitmann Co., Houston, Texas; and the Woodward Co., Albany, N. Y.

READING IRON COMPANY

C. T. Ressler, formerly Manager of Railroad and Marine Sales, is appointed Specification Engineer, Sales Division. R. I. Fretz, formerly District Sales Representative, with headquarters in Columbus, Ohio, is appointed Manager of Eastern Railroad and Marine Sales. C. W. Guthrie is appointed District Sales Representative for the Columbus territory.